



# STIC Search Report

EIC 1700

STIC Database Tracking Number: 96474

**TO:** Camie Thompson  
**Location:** CP3 11B28  
**Art Unit :** 1774  
**June 13, 2003**

**Case Serial Number:** 10/060203

**From:** Barba Koroma  
**Location:** EIC 1700  
CP3/4-3D62  
**Phone:** 305-3542

**barba.koroma@uspto.gov**

## Search Notes

Examiner Thompson:

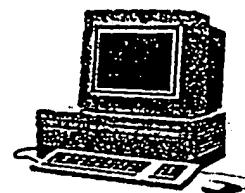
Please find attached the result set of the search you requested. There are 39 hits derived from structures limited with utility-text. Please let me know if you have any questions.

Thanks.

# EIC1700

## Search Results

### Feedback Form (Optional)



Scientific & Technical Information Center

The search results generated for your recent request are attached. If you have any questions or comments (compliments or complaints) about the scope or the results of the search, please contact *the EIC searcher* who conducted the search *or contact:*

Kathleen Fuller, Team Leader, 308-4290, CP3/4 3D62

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#### **Voluntary Results Feedback Form**

➤ *I am an examiner in Workgroup:*  Example: 1713

➤ *Relevant prior art found, search results used as follows:*

- 102 rejection
- 103 rejection
- Cited as being of interest.
- Helped examiner better understand the invention.
- Helped examiner better understand the state of the art in their technology.

*Types of relevant prior art found:*

- Foreign Patent(s)
- Non-Patent Literature  
(journal articles, conference proceedings, new product announcements etc.)

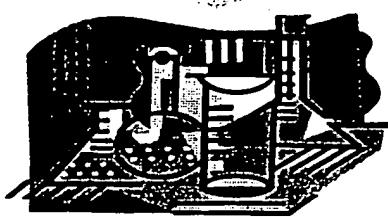
➤ *Relevant prior art not found:*

- Results verified the lack of relevant prior art (helped determine patentability).
- Search results were not useful in determining patentability or understanding the invention.

**Other Comments:**

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Drop off completed forms in CP3/4 - 3D62 .



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*Scientific and Technical Information Center*

**Search Results Feedback Form**

The search results generated for your recent request are attached. If you have any questions or comments (compliments or complaints) about the scope or the results of the search, please contact the searcher whose name is circled below.

Kathleen Fuller 308-4290

John Calve 308-4139

Barba Koroma 305-3542

Eric Linnell 308-4143

All searchers are located in the library in CP3/4 3D62

## SEARCH REQUEST FORM

Scientific and Technical Information Center

Requester's Full Name: Connie S. Thompson Examiner #: 79264 Date: 6/12/03  
 Art Unit: 1774 Phone Number 305-5478 Serial Number: 10/060203  
 Mail Box and Bldg/Room Location: CP3-11B28 Results Format Preferred (circle):  PAPER  DISK  E-MAIL

If more than one search is submitted, please prioritize searches in order of need.

Please provide a detailed statement of the search topic, and describe as specifically as possible the subject matter to be searched. Include the elected species or structures, keywords; synonyms, acronyms, and registry numbers; and combine with the concept or utility of the invention. Define any terms that may have a special meaning. Give examples or relevant citations; authors, etc., if known. Please attach a copy of the cover sheet, pertinent claims, and abstract.

Title of Invention: Organic electroluminescent materials

Inventors (please provide full names): Shinji Matsuo; Kazuo Ishii; Hiroshi Miyazaki; Toshiro Yuki; Hitoshi Nakada; Ryuji Murayama; Yoshihiko Sawada; Tsuyoshi Naijo; Yoshinori Fukuda

Earliest Priority Filing Date: February 8, 2001

\*For Sequence Searches Only\* Please include all pertinent information (parent, child, divisional; or issued patent numbers) along with the appropriate serial number.

Please do a "Search + CAS" Search on Claims 1-7

Thank you

Please see attached ☺

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## STAFF USE ONLY

Searcher: Konnie BM  
 Searcher Phone #: 305-5472  
 Searcher Location: ETC 1700  
 Date Searcher Picked Up: 6/12/03  
 Date Completed: 6/13/03  
 Searcher Prep & Review Time: 6hr  
 Clerical Prep Time: \_\_\_\_\_  
 Online Time: 120m

## Type of Search

NA Sequence (#) \_\_\_\_\_  
 AA Sequence (#) \_\_\_\_\_  
 Structure (#)  \_\_\_\_\_  
 Bibliographic  \_\_\_\_\_  
 Litigation \_\_\_\_\_  
 Fulltext \_\_\_\_\_  
 Patent Family \_\_\_\_\_  
 Other \_\_\_\_\_

## Vendors and cost where applicable

STN  \_\_\_\_\_  
 Dialog \_\_\_\_\_  
 Questel/Orbit \_\_\_\_\_  
 Dr. Link \_\_\_\_\_  
 Lexis/Nexis \_\_\_\_\_  
 Sequence Systems \_\_\_\_\_  
 WWW/Internet \_\_\_\_\_  
 Other (specify) \_\_\_\_\_

Page 1Thompson203

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FILE 'REGISTRY' ENTERED AT 14:13:14 ON 13 JUN 2003  
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provided by InfoChem.

STRUCTURE FILE UPDATES: 12 JUN 2003 HIGHEST RN 530077-26-0  
DICTIONARY FILE UPDATES: 12 JUN 2003 HIGHEST RN 530077-26-0

TSCA INFORMATION NOW CURRENT THROUGH JANUARY 6, 2003

Please note that search-term pricing does apply when  
conducting SmartSELECT searches.

Crossover limits have been increased. See HELP CROSSOVER for details.

Experimental and calculated property data are now available. See HELP  
PROPERTIES for more information. See STNote 27, Searching Properties  
in the CAS Registry File, for complete details:  
<http://www.cas.org/ONLINE/STN/STNOTES/stnotes27.pdf>

=> file caplus  
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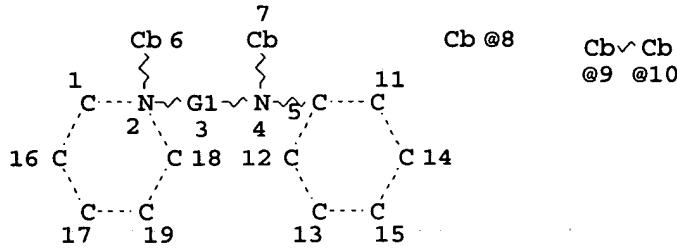
FILE COVERS 1907 - 13 Jun 2003 VOL 138 ISS 25  
FILE LAST UPDATED: 12 Jun 2003 (20030612/ED)

This file contains CAS Registry Numbers for easy and accurate  
substance identification.

=> d que  
L5 1 SEA FILE=REGISTRY ABB=ON PLU=ON 123847-85-8  
L6 1012 SEA FILE=CAPLUS ABB=ON PLU=ON L5  
L14 SCR 1842

KOROMA EIC1700

L20 SCR 1610  
L24 STR



VAR G1=8/9-2 10-4

## NODE ATTRIBUTES:

DEFAULT MLEVEL IS ATOM

DEFAULT ECLEVEL IS LIMITED

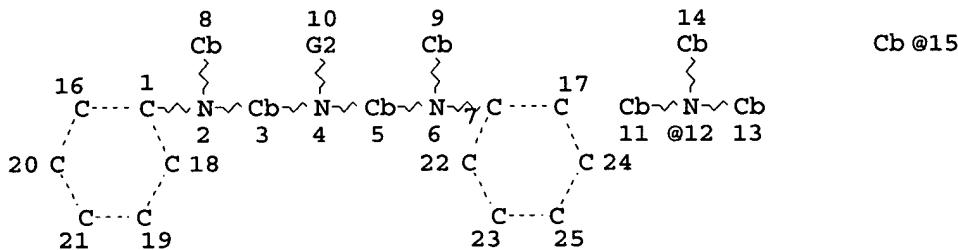
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RING(S) ARE ISOLATED OR EMBEDDED

NUMBER OF NODES IS 19

STEREO ATTRIBUTES: NONE

L25 STR



VAR G2=15/12

## NODE ATTRIBUTES:

DEFAULT MLEVEL IS ATOM

DEFAULT ECLEVEL IS LIMITED

## **GRAPH ATTRIBUTES:**

RING(S) ARE ISOLATED OR EMBEDDED

NUMBER OF NODES IS 25

STEREO ATTRIBUTES: NONE

L27 688 SEA FILE=REGISTRY SSS FUL (L24 OR L25) AND L14 AND L20

L28 587 SEA FILE=CAPLUS ABB=ON PLU=ON L27

I-29 1400 SEA FILE=CAPLUS ABB=ON PLU=ON L6 OR L28

L46 871 SEA FILE=CAPLUS ABB=ON PLU=ON L29(L) (EL OR ?LUMINESC?)

L47 95 SEA FILE=CAPLUS ABB=ON PLU=ON L29(L) (PREP OR IMF OR SPN) /RL

L48 39 SEA FILE=CAPLUS ABB=ON PLU=ON L46 AND L47

148 55 SEA FILE-CARLOS ADD-ON TEC-ON 210 AND 211

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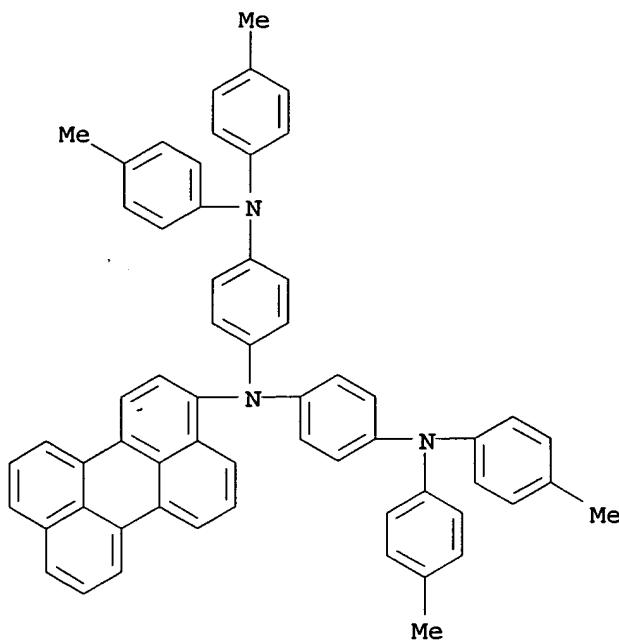
L48 ANSWER 1 OF 39 CAPLUS COPYRIGHT 2003 ACS  
ACCESSION NUMBER: 2003:352229 CAPLUS  
DOCUMENT NUMBER: 138:360465  
TITLE: Perylenyl amines for organic electroluminescent devices and such devices  
INVENTOR(S): Tanaka, Hiroaki; Kanno, Masaki; Yagi, Tamao; Toba, Yasumasa  
PATENT ASSIGNEE(S): Toyo Ink Mfg. Co., Ltd., Japan  
SOURCE: Jpn. Kokai Tokkyo Koho, 43 pp.  
CODEN: JKXXAF  
DOCUMENT TYPE: Patent  
LANGUAGE: Japanese  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2003129043	A2	20030508	JP 2001-328707	20011026
PRIORITY APPLN. INFO.:			JP 2001-328707	20011026

AB Ar1NR1R2 [Ar1 = (un)substituted perylenyl; R1-2 = (un)substituted aliph. or arom. hydrocarbons or heterocycles, with but R1 or R2 = Ar2X1NR3R4; Ar2 = (un)substituted arom. hydrocarbon or heterocycle; R3-4 = (un)substituted aliph. or arom. hydrocarbons or heterocycles; X1 = direct bond, O, S, :CR5R6, :SiR7R8; R5-8 = H, (un)substituted aliph. or arom. hydrocarbon; either 2 of Ar2, X1, R3, and R4 may form ring; either 2 of Ar1, R1, and R2 may form ring] is claimed as a compd. for use in electroluminescent devices. Electroluminescent devices including org. or light-emitting layer(s), contg. the claimed compd(s)., sandwiched in between a pair of electrodes are also claimed. Devices giving out long-lasting yellow to red light having high intensity are obtained.

IT 519180-16-6P 519180-17-7P  
RL: DEV (Device component use); IMF (Industrial manufacture);  
TEM (Technical or engineered material use); PREP (Preparation);  
USES (Uses)  
(peryleneamines for org. electroluminescent devices with durable emission of yellow to red light having high intensity)

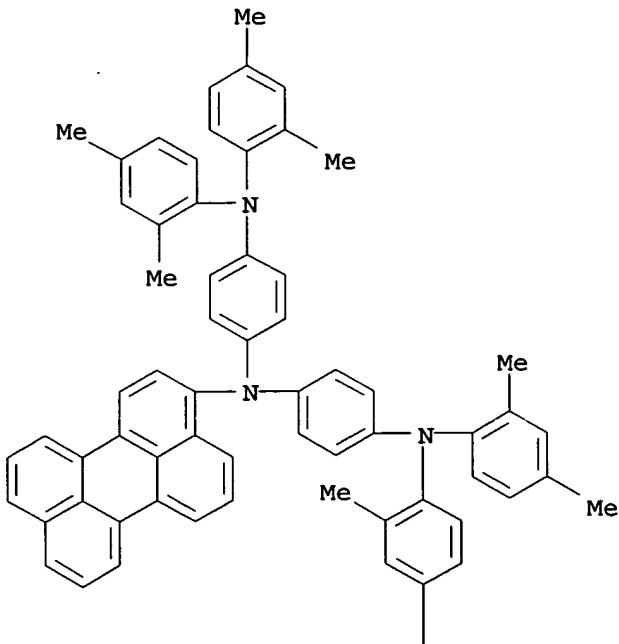
RN 519180-16-6 CAPLUS  
CN 1,4-Benzenediamine, N-[4-[bis(4-methylphenyl)amino]phenyl]-N',N'-bis(4-methylphenyl)-N-3-perylenyl- (9CI) (CA INDEX NAME)



RN 519180-17-7 CAPPLUS

CN 1,4-Benzenediamine, N-[4-[bis(2,4-dimethylphenyl)amino]phenyl]-N',N'-bis(2,4-dimethylphenyl)-N-3-perylene- (9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 2-A

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Me

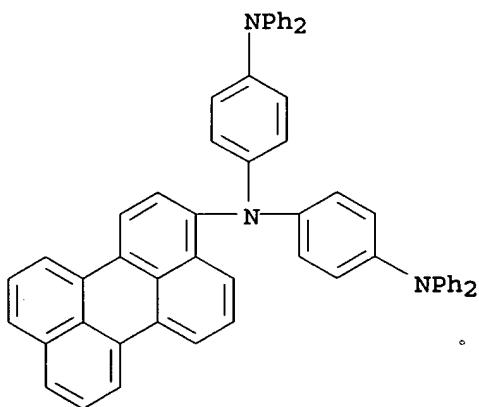
IT 519180-21-3 519180-22-4 519180-23-5  
519180-24-6 519180-25-7 519180-26-8  
519180-27-9 519180-32-6 519180-39-3

RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)

(perylenylamines for org. electroluminescent devices with durable emission of yellow to red light having high intensity)

RN 519180-21-3 CAPLUS

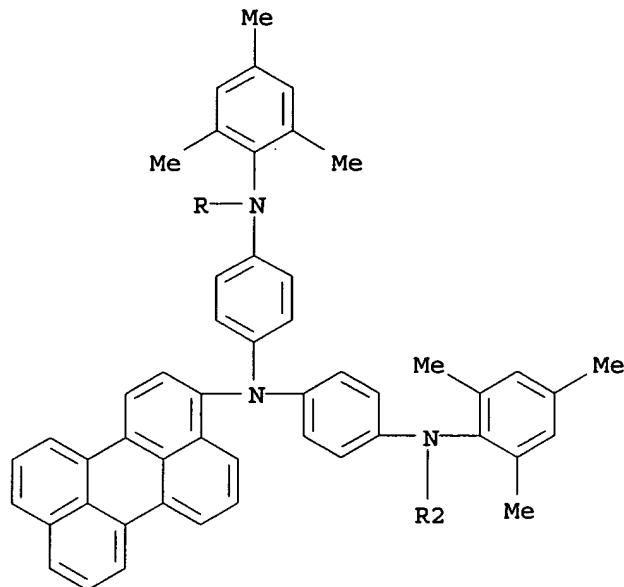
CN 1,4-Benzenediamine, N-[4-(diphenylamino)phenyl]-N-3-perylenyl-N',N'-diphenyl- (9CI) (CA INDEX NAME)



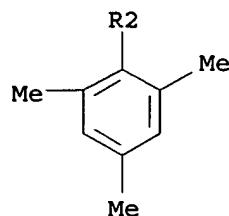
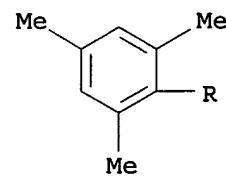
RN 519180-22-4 CAPLUS

CN 1,4-Benzenediamine, N-[4-[bis(2,4,6-trimethylphenyl)amino]phenyl]-N-3-perylenyl-N',N'-bis(2,4,6-trimethylphenyl)- (9CI) (CA INDEX NAME)

PAGE 1-A

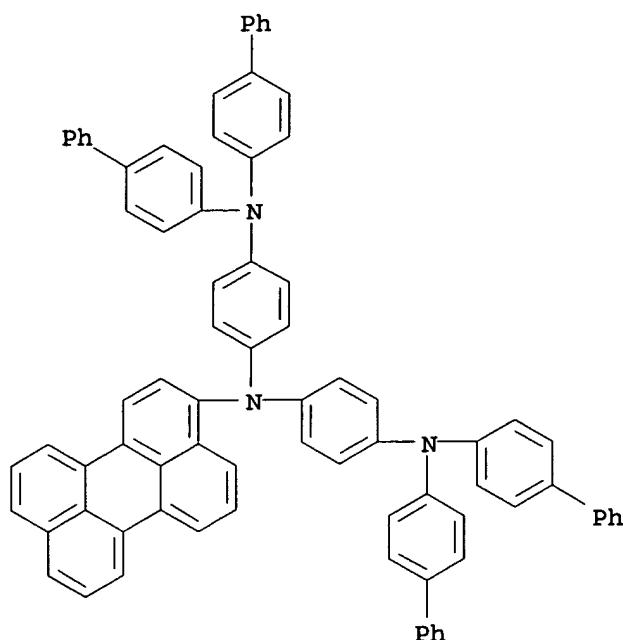


PAGE 2-A



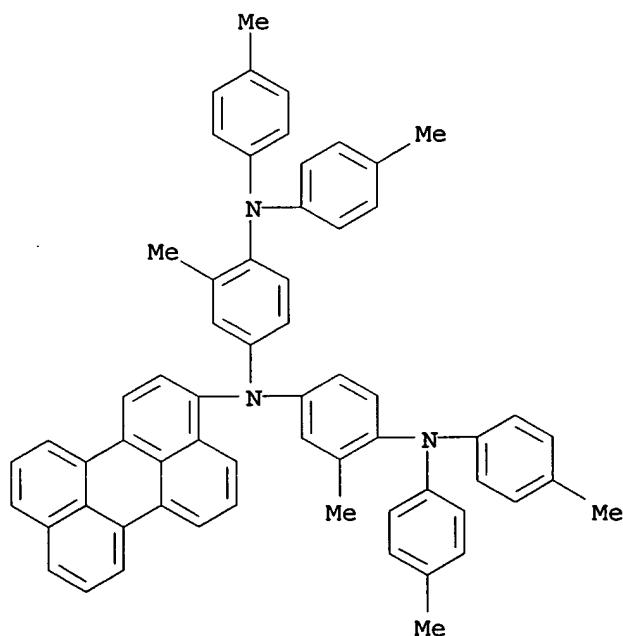
RN 519180-23-5 CAPLUS

CN 1,4-Benzenediamine, N,N-bis[1,1'-biphenyl]-4-yl-N'-(4-(bis[1,1'-biphenyl]-4-ylamino)phenyl)-N'-3-perylenyl- (9CI) (CA INDEX NAME)



RN 519180-24-6 CAPLUS

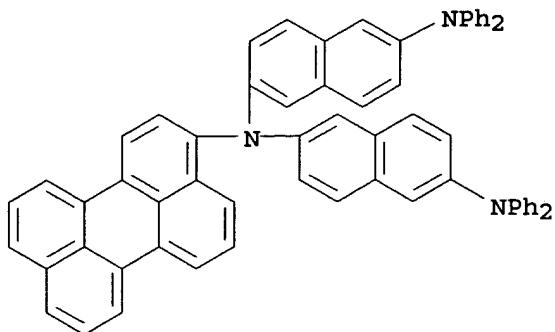
CN 1,4-Benzenediamine, N4-[4-[bis(4-methylphenyl)amino]-3-methylphenyl]-2-methyl-N1,N1-bis(4-methylphenyl)-N4-3-perylenyl- (9CI) (CA INDEX NAME)



RN 519180-25-7 CAPLUS

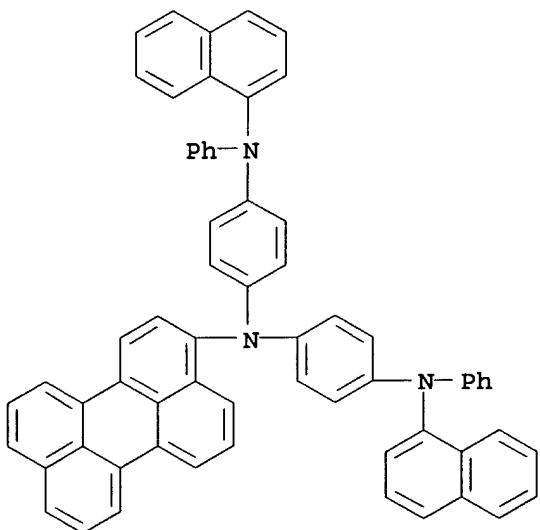
CN 2,6-Naphthalenediamine, N-[2-(diphenylamino)-6-naphthalenyl]-N-3-perylenyl-

N',N'-diphenyl- (9CI) (CA INDEX NAME)



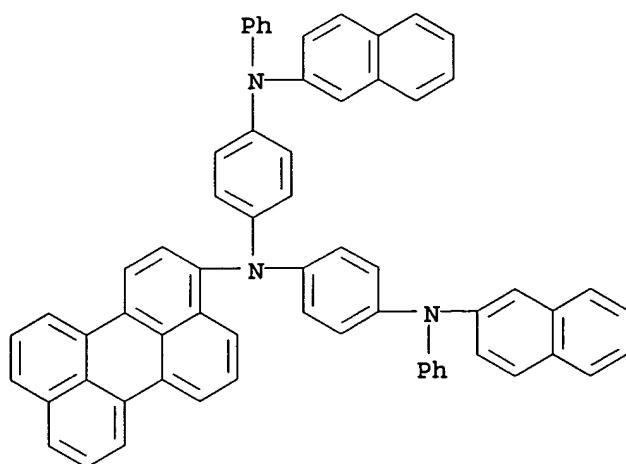
RN 519180-26-8 CAPLUS

CN 1,4-Benzenediamine, N-1-naphthalenyl-N'-[4-(1-naphthalenylphenylamino)phenyl]-N'-3-phenyl-N-phenyl- (9CI) (CA INDEX NAME)



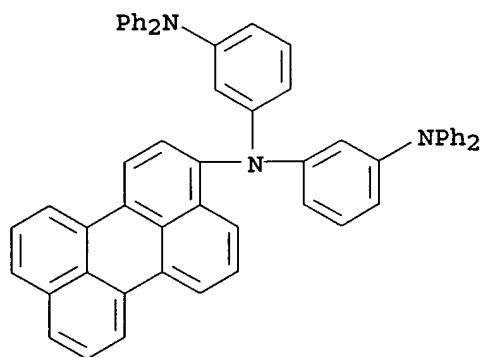
RN 519180-27-9 CAPLUS

CN 1,4-Benzenediamine, N-2-naphthalenyl-N'-(4-(2-naphthalenylphenylamino)phenyl)-N'-3-phenyl-N-phenyl- (9CI) (CA INDEX NAME)



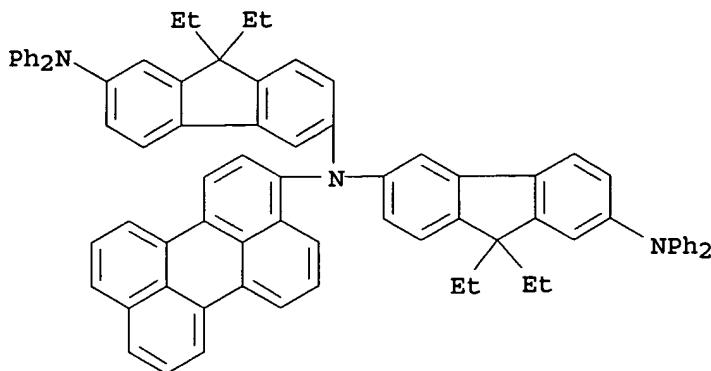
RN 519180-32-6 CAPLUS

CN 1,3-Benzenediamine, N-[3-(diphenylamino)phenyl]-N-3-perylenyl-N',N'-diphenyl- (9CI) (CA INDEX NAME)



RN 519180-39-3 CAPLUS

CN 9H-Fluorene-2,6-diamine, N6-[7-(diphenylamino)-9,9-diethyl-9H-fluoren-3-yl]-9,9-diethyl-N6-3-perylenyl-N2,N2-diphenyl- (9CI) (CA INDEX NAME)

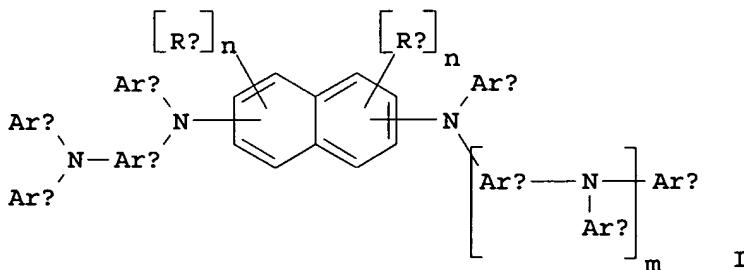


IC ICM C09K011-06  
ICS H05B033-14; C07C211-54; C07C217-92; C07C217-94; C07C323-37;  
C07D209-86; C07F007-08  
CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and Other  
Reprographic Processes)  
Section cross-reference(s): 73  
ST org electroluminescent device perylenylamine; yellow light emitting org  
electroluminescent device; orange light emitting org electroluminescent  
device  
IT Electroluminescent devices  
(perylenylamines for org. electroluminescent devices with durable  
emission of yellow to red light having high intensity)  
IT 519180-16-6P 519180-17-7P 519180-18-8P 519180-19-9P  
519180-20-2P  
RL: DEV (Device component use); IMF (Industrial manufacture);  
TEM (Technical or engineered material use); PREP (Preparation);  
USES (Uses)  
(perylenylamines for org. electroluminescent devices with  
durable emission of yellow to red light having high intensity)  
IT 519180-21-3 519180-22-4 519180-23-5  
519180-24-6 519180-25-7 519180-26-8  
519180-27-9 519180-28-0 519180-29-1 519180-30-4  
519180-31-5 519180-32-6 519180-33-7 519180-34-8  
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519180-40-6 519180-41-7 519180-42-8 519180-43-9 519180-44-0  
519180-45-1 519180-46-2 519180-47-3 519180-48-4 519180-49-5  
519180-50-8 519180-51-9 519180-52-0 519180-53-1  
RL: DEV (Device component use); TEM (Technical or engineered material  
use); USES (Uses)  
(perylenylamines for org. electroluminescent devices with  
durable emission of yellow to red light having high intensity)  
IT 519180-55-3P  
RL: PNU (Preparation, unclassified); RCT (Reactant); PREP (Preparation);  
RACT (Reactant or reagent)  
(perylenylamines for org. electroluminescent devices with durable  
emission of yellow to red light having high intensity)  
IT 106-38-7, 4-Bromotoluene 19264-71-2, 9-(4-Chlorophenyl)carbazole

20492-13-1, 3-Aminoperylene 58047-42-0 167218-38-4 519180-54-2  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (perylenylamines for org. electroluminescent devices with durable  
 emission of yellow to red light having high intensity)

L48 ANSWER 2 OF 39 CAPLUS COPYRIGHT 2003 ACS  
 ACCESSION NUMBER: 2003:259841 CAPLUS  
 DOCUMENT NUMBER: 138:278192  
 TITLE: Organic electroluminescent devices with high luminance  
 employing naphthalene derivatives  
 INVENTOR(S): Parton, Richard Lee; Tang, Ching Wan  
 PATENT ASSIGNEE(S): Eastman Kodak Company, USA  
 SOURCE: Eur. Pat. Appl., 35 pp.  
 CODEN: EPXXDW  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 1298738	A2	20030402	EP 2002-78822	20020916
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, SK				
JP 2003133076	A2	20030509	JP 2002-283364	20020927
PRIORITY APPLN. INFO.:			US 2001-966278	A 20010928
			US 2002-145363	A 20020514
OTHER SOURCE(S):		MARPAT 138:278192		
GI				



AB Multilayer electroluminescent devices are described which comprise a cathode, an anode, a light-emitting layer and a layer disposed between the cathode and anode contg. a naphthalene compd. represented by formula I, where m is 0, 1 or 2; each Ra is an independently selected substituent and each n is independently 0 to 3; each Ara is an independently selected arom. group; and each Arb is an independently selected carbocyclic arom. group; provided that 2 ring substituents may join to form a ring.

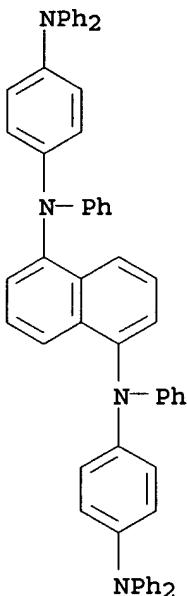
IT 503624-46-2P

RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PRP (Properties); PYP (Physical process); SPN (Synthetic preparation); PREP (Preparation); PROC (Process); USES (Uses)

(hole-injecting layer; org. electroluminescent devices with high luminance employing naphthalene derivs.)

RN 503624-46-2 CAPLUS

CN 1,5-Naphthalenediamine, N,N'-bis[4-(diphenylamino)phenyl]-N,N'-diphenyl- (9CI) (CA INDEX NAME)



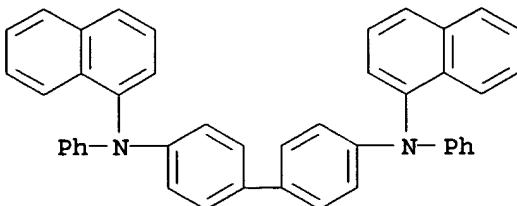
IT 123847-85-8, NPB

RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PRP (Properties); PYP (Physical process); PROC (Process); USES (Uses)

(hole-transporting layer; org. electroluminescent devices with high luminance employing naphthalene derivs. and)

RN 123847-85-8 CAPLUS

CN [1,1'-Biphenyl]-4,4'-diamine, N,N'-di-1-naphthalenyl-N,N'-diphenyl- (9CI) (CA INDEX NAME)



IT 503624-45-1P 503624-47-3P

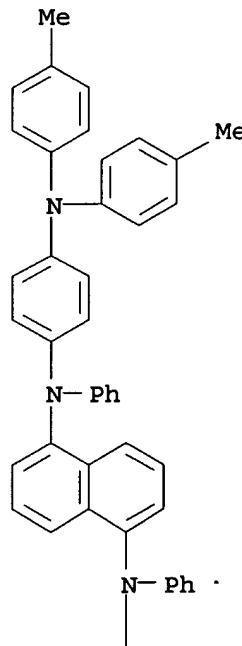
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PRP (Properties); PYP (Physical process); SPN (Synthetic preparation); PREP (Preparation); PROC (Process); USES (Uses)

(org. electroluminescent devices with high luminance employing naphthalene derivs.)

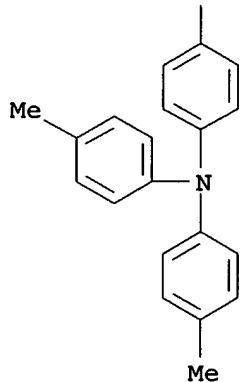
RN 503624-45-1 CAPLUS

CN 1,5-Naphthalenediamine, N,N'-bis[4-[bis(4-methylphenyl)amino]phenyl]-N,N'-diphenyl- (9CI) (CA INDEX NAME)

PAGE 1-A

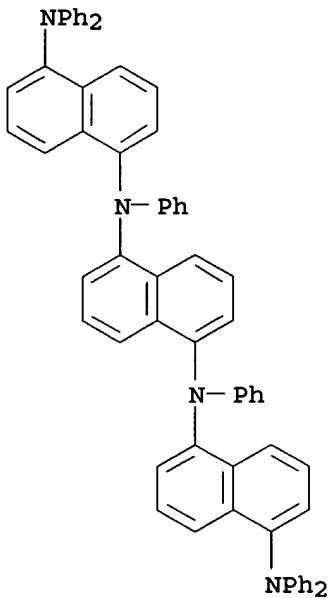


PAGE 2-A



RN 503624-47-3 CAPLUS

CN 1,5-Naphthalenediamine, N,N'-bis[5-(diphenylamino)-1-naphthalenyl]-N,N'-diphenyl- (9CI) (CA INDEX NAME)



IC ICM H01L051-30

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

Section cross-reference(s): 22, 25, 76

ST org electroluminescent device naphthalene deriv OLED

IT Amines, uses

RL: DEV (Device component use); USES (Uses)

(aryl, tertiary, hole-transporting layer; org. electroluminescent devices with high luminance employing naphthalene derivs. and)

IT Coordination compounds

RL: DEV (Device component use); USES (Uses)  
(light-emitting layer; org. electroluminescent devices with high  
luminance employing naphthalene derivs. and)

IT Electroluminescent devices  
(org.; org. electroluminescent devices with high luminance employing  
naphthalene derivs.)

IT 155306-71-1  
RL: DEV (Device component use); MOA (Modifier or additive use); PEP  
(Physical, engineering or chemical process); PRP (Properties); PYP  
(Physical process); PROC (Process); USES (Uses)  
(fluorescent dopant; org. electroluminescent devices with high  
luminance employing naphthalene derivs. and)

IT 503624-46-2P  
RL: DEV (Device component use); PEP (Physical, engineering or chemical  
process); PRP (Properties); PYP (Physical process); SPN (Synthetic  
preparation); PREP (Preparation); PROC (Process); USES  
(Uses)  
(hole-injecting layer; org. electroluminescent devices with  
high luminance employing naphthalene derivs.)

IT 51311-17-2, Carbon fluoride  
RL: DEV (Device component use); PEP (Physical, engineering or chemical  
process); PYP (Physical process); PROC (Process); USES (Uses)  
(hole-injecting layer; org. electroluminescent devices with high  
luminance employing naphthalene derivs. and)

IT 123847-85-8, NPB  
RL: DEV (Device component use); PEP (Physical, engineering or chemical  
process); PRP (Properties); PYP (Physical process); PROC (Process); USES  
(Uses)  
(hole-transporting layer; org. electroluminescent devices  
with high luminance employing naphthalene derivs. and)

IT 91-22-5D, Quinoline, deriv.  
RL: DEV (Device component use); USES (Uses)  
(light-emitting layer; org. electroluminescent devices with high  
luminance employing naphthalene derivs. and)

IT 2243-62-1D, 1,5-Diaminonaphthalene, deriv. 2243-67-6D,  
2,6-Diaminonaphthalene, deriv.  
RL: DEV (Device component use); USES (Uses)  
(org. electroluminescent devices with high luminance employing  
naphthalene derivs.)

IT 503624-45-1P 503624-47-3P  
RL: DEV (Device component use); PEP (Physical, engineering or chemical  
process); PRP (Properties); PYP (Physical process); SPN (Synthetic  
preparation); PREP (Preparation); PROC (Process); USES  
(Uses)  
(org. electroluminescent devices with high luminance  
employing naphthalene derivs.)

IT 2085-33-8, Aluminum tris(8-hydroxyquinolinato)  
RL: DEV (Device component use); PEP (Physical, engineering or chemical  
process); PRP (Properties); PYP (Physical process); PROC (Process); USES  
(Uses)  
(org. electroluminescent devices with high luminance employing  
naphthalene derivs. and)

IT 108-86-1, Bromobenzene, reactions 591-50-4, Iodobenzene 2243-62-1,  
1,5-Diaminonaphthalene 7351-74-8, 1,5-Dibromonaphthalene 36809-26-4  
58047-42-0  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(org. electroluminescent devices with high luminance employing  
naphthalene derivs. prep'd. using)  
IT 329180-27-0P 500284-18-4P  
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT  
(Reactant or reagent)  
(org. electroluminescent devices with high luminance employing  
naphthalene derivs. prep'd. using)

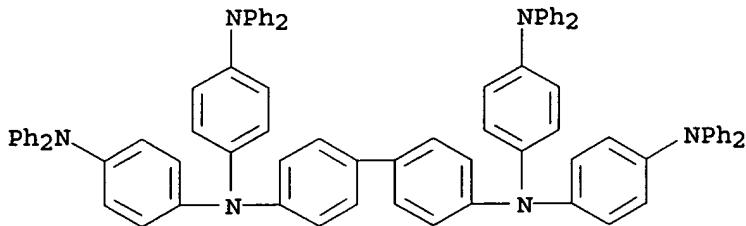
L48 ANSWER 3 OF 39 CAPLUS COPYRIGHT 2003 ACS  
ACCESSION NUMBER: 2003:143381 CAPLUS  
DOCUMENT NUMBER: 138:187508  
TITLE: Preparation of aromatic diamines by dimerization of  
aromatic halides  
INVENTOR(S): Kawamura, Hisayuki; Moriwaki, Fumio  
PATENT ASSIGNEE(S): Idemitsu Kosan Co., Ltd., Japan  
SOURCE: Jpn. Kokai Tokkyo Koho, 11 pp.  
CODEN: JKXXAF  
DOCUMENT TYPE: Patent  
LANGUAGE: Japanese  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2003055320	A2	20030226	JP 2001-247018	20010816
PRIORITY APPLN. INFO.:			JP 2001-247018	20010816

OTHER SOURCE(S): MARPAT 138:187508  
AB Ar1Ar2NAr3Ar3NAr1Ar2 [Ar1, Ar2 = (un)substituted 5- to 30-membered  
monovalent arom. group; Ar3 = (un)substituted 5- to 30-membered divalent  
arom. group; X = halo], useful as materials for heat-resistant  
electroluminescent devices and charge-transfer agents for electrophotog.  
photoreceptors, are prep'd. by dimerization of Ar1Ar2NAr3X (Ar1-Ar3 = same  
as above; X = halo). Thus, NiCl<sub>2</sub> was treated with Ph<sub>3</sub>P, Zn powder, and KI  
at 70-80.degree. in vacuo, mixed with THF, and treated with  
N,N-di(4-diphenyl)-4-bromoaniline/THF at 65-70.degree. for 10 h to give  
64% N,N,N',N'-tetrakis(4-diphenyl)-4,4'-benzidine, vs. 3%, when prep'd.  
from N,N'-bis(4-diphenyl)-4,4'-benzidine and 4-iodobiphenyl.

IT 214338-27-9P  
RL: IMF (Industrial manufacture); SPN (Synthetic  
preparation); PREP (Preparation)  
(prep'n. of arom. diamines as materials for charge-transfer agents and  
electroluminescent devices with transition metal complexes as  
dimerization catalysts)

RN 214338-27-9 CAPLUS  
CN [1,1'-Biphenyl]-4,4'-diamine, N,N,N',N'-tetrakis[4-(diphenylamino)phenyl]-  
(9CI) (CA INDEX NAME)



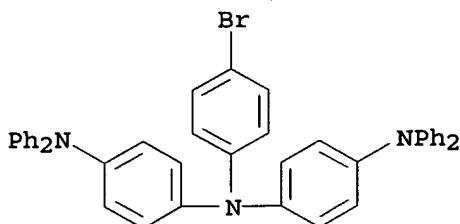
IT 499128-72-2P

RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)

(prepn. of arom. diamines as materials for charge-transfer agents and electroluminescent devices with transition metal complexes as dimerization catalysts)

RN 499128-72-2 CAPLUS

CN 1,4-Benzenediamine, N-(4-bromophenyl)-N-[4-(diphenylamino)phenyl]-N',N'-diphenyl- (9CI) (CA INDEX NAME)



IC ICM C07C209-68

ICS C07C211-54; C07C211-58; C07D207-34; C07D213-74; C07D215-38; C07D271-10; C07D307-66; C07B061-00

CC 25-4 (Benzene, Its Derivatives, and Condensed Benzenoid Compounds)  
Section cross-reference(s): 73, 74

ST arom diamine prep material electroluminescent device; charge transfer electrophotog photoreceptor material diamine prep; nickel catalyst dimerization arom halide

IT Electrophotographic photoconductors (photoreceptors)

(charge-transfer agents for; prepn. of arom. diamines as materials for charge-transfer agents and electroluminescent devices with transition metal complexes as dimerization catalysts)

IT Phosphines

RL: CAT (Catalyst use); USES (Uses)

(complexes, with transition metals; prepn. of arom. diamines as materials for charge-transfer agents and electroluminescent devices with transition metal complexes as dimerization catalysts)

IT Dimerization catalysts

Electroluminescent devices

(prep. of arom. diamines as materials for charge-transfer agents and electroluminescent devices with transition metal complexes as dimerization catalysts)

IT Aryl halides

RL: RCT (Reactant); RACT (Reactant or reagent)  
(prepn. of arom. diamines as materials for charge-transfer agents and  
electroluminescent devices with transition metal complexes as  
dimerization catalysts)

IT Transition metal complexes  
RL: CAT (Catalyst use); USES (Uses)  
(with phosphines; prepn. of arom. diamines as materials for  
charge-transfer agents and electroluminescent devices with transition  
metal complexes as dimerization catalysts)

IT 603-35-0, Triphenylphosphine, uses 7718-54-9, Nickel chloride, uses  
RL: CAT (Catalyst use); USES (Uses)  
(prepn. of arom. diamines as materials for charge-transfer agents and  
electroluminescent devices with transition metal complexes as  
dimerization catalysts)

IT 145898-89-1P 164724-35-0P 194727-77-0P 214338-27-9P  
RL: IMF (Industrial manufacture); SPN (Synthetic  
preparation); PREP (Preparation)  
(prepn. of arom. diamines as materials for charge-transfer agents and  
electroluminescent devices with transition metal complexes as  
dimerization catalysts)

IT 90-14-2, 1-Iodonaphthalene 92-52-4, Biphenyl, reactions 92-86-4,  
4,4'-Dibromobiphenyl 103-88-8 106-40-1, p-Bromoaniline 122-39-4,  
Diphenylamine, reactions 591-50-4, Iodobenzene 603-34-9,  
Triphenylamine  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(prepn. of arom. diamines as materials for charge-transfer agents and  
electroluminescent devices with transition metal complexes as  
dimerization catalysts)

IT 1591-31-7P, 4-Iodobiphenyl 29325-58-4P 38257-52-2P,  
4-Iodotriphenylamine 54446-36-5P, 4-Bromodiphenylamine 138310-84-6P  
202831-65-0P 499128-71-1P 499128-72-2P  
RL: RCT (Reactant); SPN (Synthetic preparation); PREP  
(Preparation); RACT (Reactant or reagent)  
(prepn. of arom. diamines as materials for charge-transfer agents and  
electroluminescent devices with transition metal complexes as  
dimerization catalysts)

L48 ANSWER 4 OF 39 CAPLUS COPYRIGHT 2003 ACS

ACCESSION NUMBER: 2003:118445 CAPLUS  
DOCUMENT NUMBER: 138:178012  
TITLE: Electroluminescent compositions and devices  
INVENTOR(S): Xie, Shuang  
PATENT ASSIGNEE(S): Can.  
SOURCE: U.S. Pat. Appl. Publ., 49 pp.  
CODEN: USXXCO  
DOCUMENT TYPE: Patent  
LANGUAGE: English  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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US 2003031893 A1 20030213 US 2000-736234 20001215  
 US 6572985 B2 20030603

PRIORITY APPLN. INFO.: US 2000-736234 20001215

OTHER SOURCE(S): MARPAT 138:178012

AB Mixts. of isomeric arom. amine compds. described by the formula  $[(A_1)a + (A_2)b + \dots + (A_n)x]$  ( $A_1, A_2, \dots, A_n$  = individual components of the mixt. of isomeric arom. amines) are described in which each amine contains  $\geq 24$  carbon atoms and are described by the general formula  $Ar_1N(Ar_2)Ar_3$  ( $Ar_1$  = (un)substituted C $\geq 18$  aryl group;  $Ar_2$  and  $Ar_3$  = individually selected (un)substituted C $\geq 6$  aryl group) and each individual component in the mixt. has the same mol. formula, the difference of each individual component is the sequences of their atoms, or the point of attachment of substituents. Electroluminescent devines incorporating the mixts. are also described.

IT 497182-62-4P

RL: DEV (Device component use); SPN (Synthetic preparation);

PREP (Preparation); USES (Uses)

(arom. amine isomeric mixts. and electroluminescent devices using them)

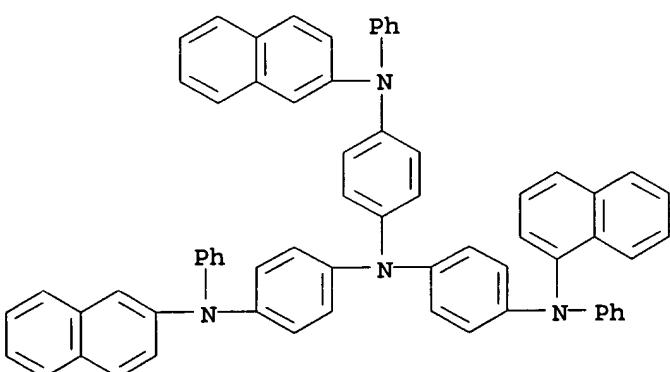
RN 497182-62-4 CAPLUS

CN 1,4-Benzenediamine, N-1-naphthalenyl-N',N'-bis[4-(1-naphthalenylphenylamino)phenyl]-N-phenyl-, mixt. with N-1-naphthalenyl-N',N'-bis[4-(2-naphthalenylphenylamino)phenyl]-N-phenyl-1,4-benzenediamine, N-2-naphthalenyl-N',N'-bis[4-(1-naphthalenylphenylamino)phenyl]-N-phenyl-1,4-benzenediamine and N-2-naphthalenyl-N',N'-bis[4-(2-naphthalenylphenylamino)phenyl]-N-phenyl-1,4-benzenediamine (9CI) (CA INDEX NAME)

CM 1

CRN 497182-61-3

CMF C66 H48 N4

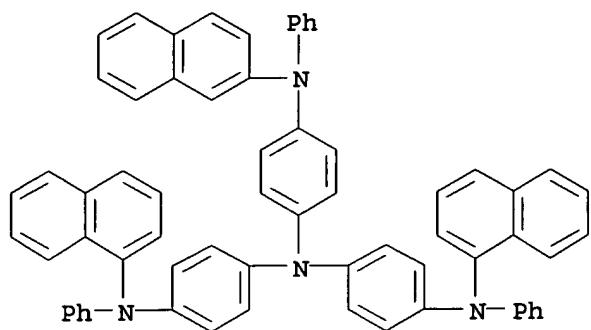


CM 2

CRN 356067-72-6

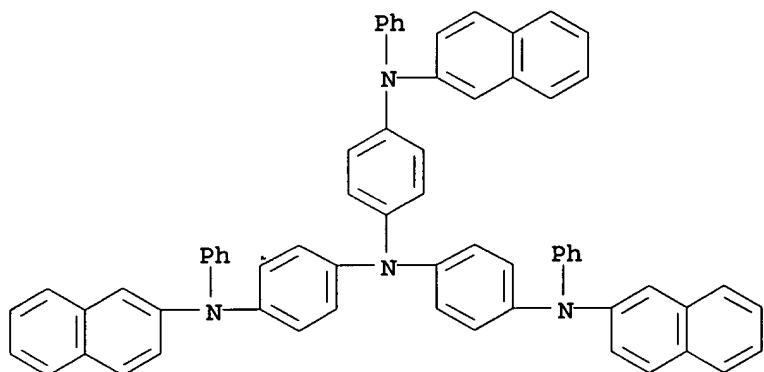
Page 20 Thompson203

CMF C66 H48 N4



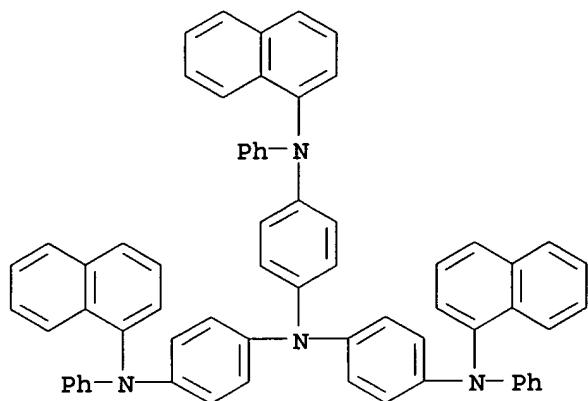
CM 3

CRN 185690-41-9  
CMF C66 H48 N4



CM 4

CRN 185690-39-5  
CMF C66 H48 N4

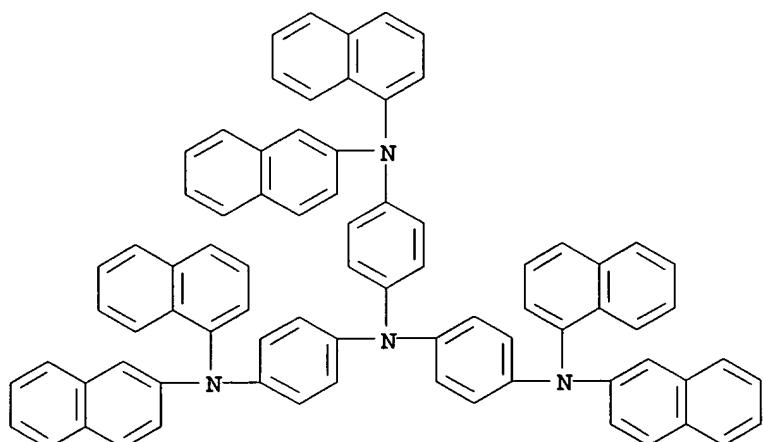


IT 192180-89-5P 497182-67-9P 497182-70-4P  
497182-72-6P 497182-74-8P 497182-76-0P  
497182-77-1P 497182-79-3P 497182-84-0P

RL: DEV (Device component use); SPN (Synthetic preparation);  
PREP (Preparation); USES (Uses)  
(mixt. contg.; arom. amine isomeric mixts. and  
electroluminescent devices using them)

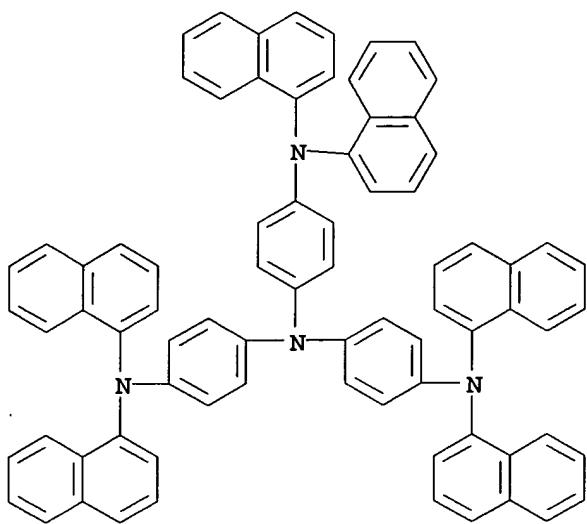
RN 192180-89-5 CAPLUS

CN 1,4-Benzenediamine, N-1-naphthalenyl-N-2-naphthalenyl-N',N'-bis[4-(1-naphthalenyl-2-naphthalenylamino)phenyl]- (9CI) (CA INDEX NAME)



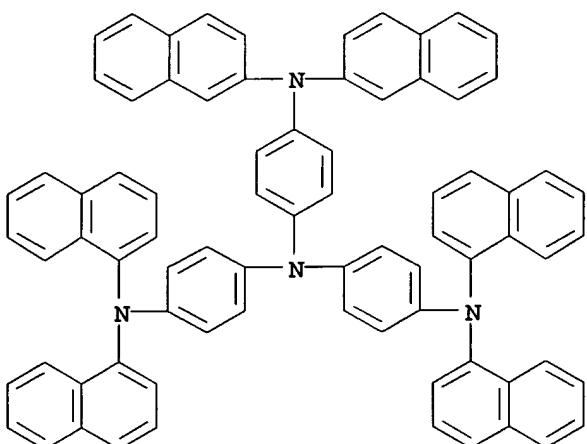
RN 497182-67-9 CAPLUS

CN 1,4-Benzenediamine, N-[1-(di-1-naphthalenylamino)phenyl]-N-[4-(di-1-naphthalenylamino)phenyl]-N',N'-di-1-naphthalenyl- (9CI) (CA INDEX NAME)



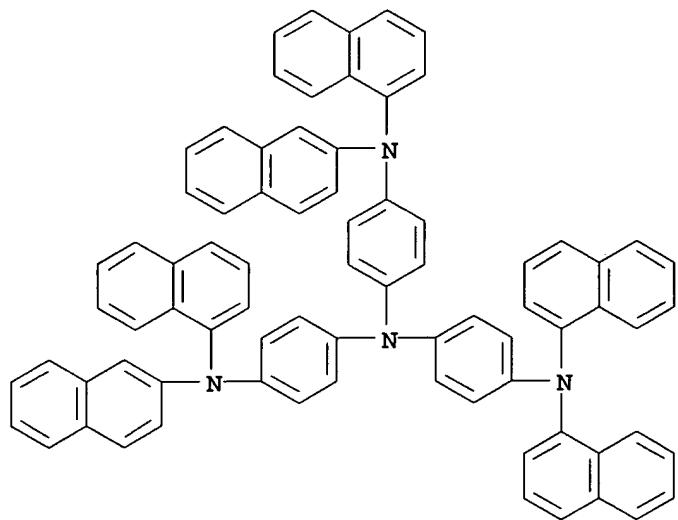
RN 497182-70-4 CAPLUS

CN 1,4-Benzenediamine, N,N-bis[4-(di-1-naphthalenylamino)phenyl]-N',N'-di-2-naphthalenyl- (9CI) (CA INDEX NAME)



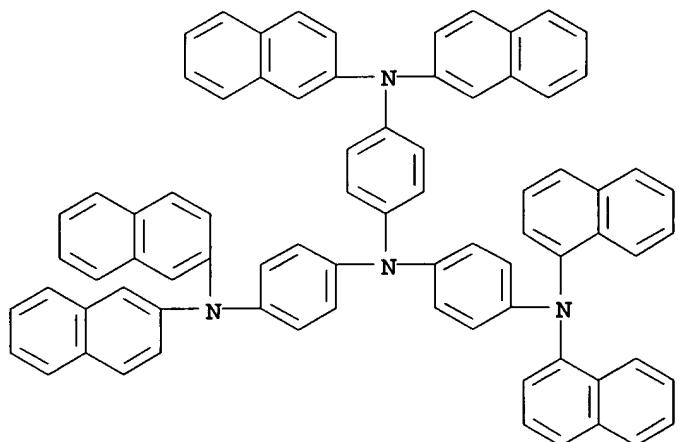
RN 497182-72-6 CAPLUS

CN 1,4-Benzenediamine, N-[4-(di-1-naphthalenylamino)phenyl]-N'-1-naphthalenyl-N''-2-naphthalenyl-N-[4-(1-naphthalenyl-2-naphthalenylamino)phenyl]- (9CI) (CA INDEX NAME)



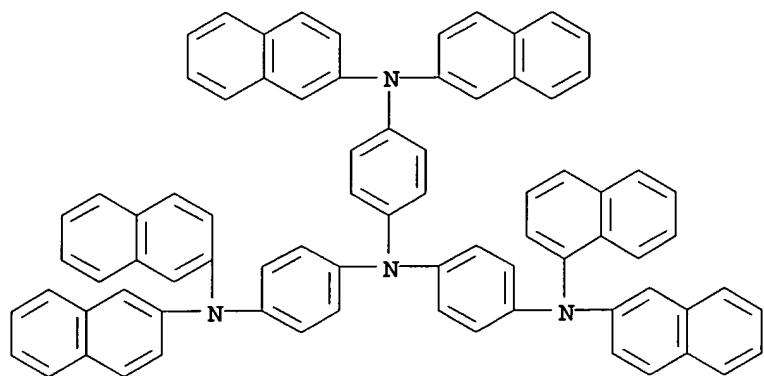
RN 497182-74-8 CAPLUS

CN 1,4-Benzenediamine, N,N-bis[4-(di-2-naphthalenylamino)phenyl]-N',N'-di-1-naphthalenyl- (9CI) (CA INDEX NAME)



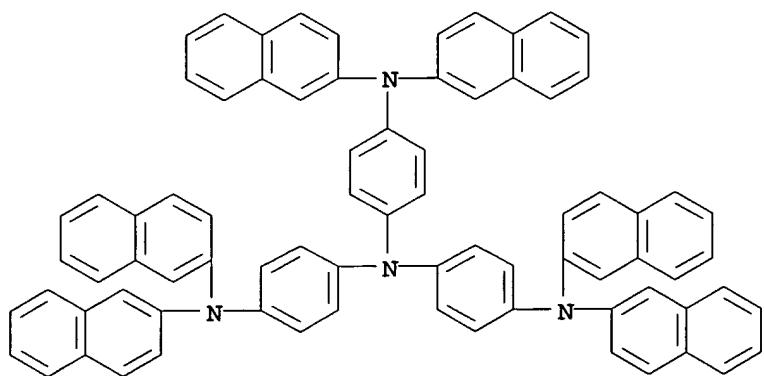
RN 497182-76-0 CAPLUS

CN 1,4-Benzenediamine, N,N-bis[4-(di-2-naphthalenylamino)phenyl]-N'-1-naphthalenyl-N''-2-naphthalenyl- (9CI) (CA INDEX NAME)



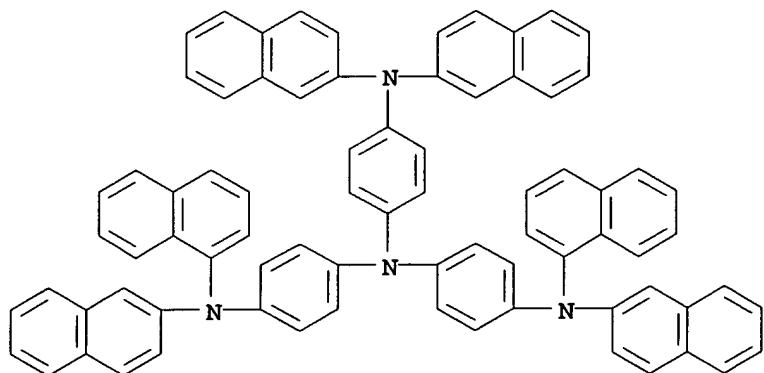
RN 497182-77-1 CAPLUS

CN 1,4-Benzenediamine, N-[1-(di-2-naphthalenylamino)phenyl]-N-[4-(di-2-naphthalenylamino)phenyl]-N'-di-2-naphthalenyl- (9CI) (CA INDEX NAME)



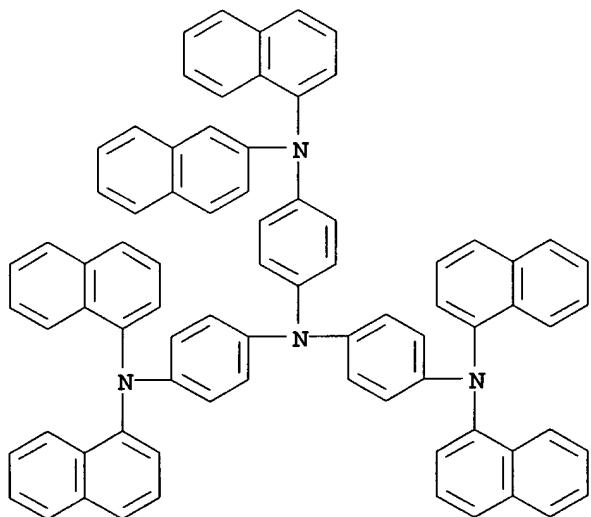
RN 497182-79-3 CAPLUS

CN 1,4-Benzenediamine, N-[4-(di-2-naphthalenylamino)phenyl]-N'-1-naphthalenyl-2-naphthalenyl-N-[1-(1-naphthalenyl-2-naphthalenylamino)phenyl]- (9CI) (CA INDEX NAME)



RN 497182-84-0 CAPLUS

CN 1,4-Benzenediamine, N,N-bis[4-(di-1-naphthalenylamino)phenyl]-N'-1-naphthalenyl-N'-2-naphthalenyl- (9CI) (CA INDEX NAME)



IC ICM H05B033-12

ICS C07C211-00

NCL 428690000; 313504000; 313506000; 428704000; 428917000; 564305000;  
564404000; 564426000; 564427000; 564428000

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

Section cross-reference(s): 25, 76

ST arom amine isomeric mixt electroluminescent device

IT Electroluminescent devices

(arom. amine isomeric mixts. and electroluminescent devices using them)

IT Amines, uses

RL: DEV (Device component use); USES (Uses)

(arom., isomers; arom. amine isomeric mixts. and electroluminescent

devices using them)  
IT Luminescent substances  
(electroluminescent; arom. amine isomeric mixts. and electroluminescent devices using them)  
IT 497182-57-7P 497182-60-2P 497182-62-4P 497182-66-8P  
RL: DEV (Device component use); SPN (Synthetic preparation);  
PREP (Preparation); USES (Uses)  
(arom. amine isomeric mixts. and electroluminescent devices using them)  
IT 90-30-2 92-86-4 135-88-6 532-18-3 737-89-3 4316-58-9 4669-06-1  
7511-49-1  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(arom. amine isomeric mixts. and electroluminescent devices using them)  
IT 183064-69-9P 192180-89-5P 197296-70-1P 197296-72-3P  
497182-67-9P 497182-68-0P 497182-69-1P 497182-70-4P  
497182-71-5P 497182-72-6P 497182-73-7P 497182-74-8P  
497182-75-9P 497182-76-0P 497182-77-1P 497182-78-2P  
497182-79-3P 497182-84-0P  
RL: DEV (Device component use); SPN (Synthetic preparation);  
PREP (Preparation); USES (Uses)  
(mixt. contg.; arom. amine isomeric mixts. and electroluminescent devices using them)

L48 ANSWER 5 OF 39 CAPLUS COPYRIGHT 2003 ACS  
ACCESSION NUMBER: 2003:90473 CAPLUS  
DOCUMENT NUMBER: 138:360132  
TITLE: The effect of annealing of organic thin films on charge injection in organic electroluminescent devices  
AUTHOR(S): Ishihara, Mari; Okumoto, Kenji; Shiota, Yasuhiko  
CORPORATE SOURCE: Department of Applied Chemistry, Faculty of Engineering, Osaka University, Osaka, 565-0871, Japan  
SOURCE: Journal of Photopolymer Science and Technology (2002), 15(5), 769-773  
CODEN: JSTEEW; ISSN: 0914-9244  
PUBLISHER: Technical Association of Photopolymers, Japan  
DOCUMENT TYPE: Journal  
LANGUAGE: English

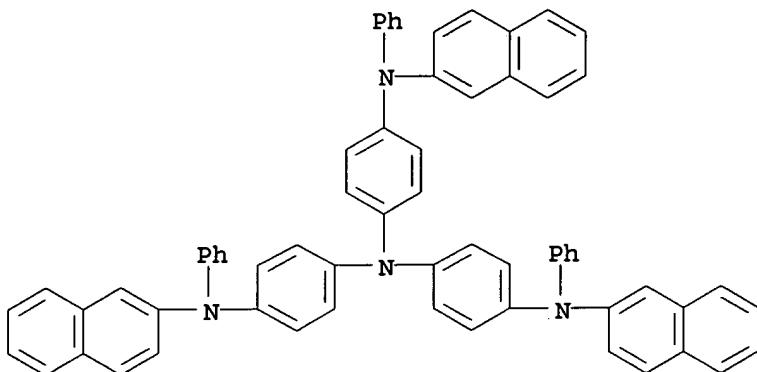
AB The effect of annealing of org. thin films on charge injection in the tris(8-quinolinolato)aluminum (Alq<sub>3</sub>)-based org. electroluminescent (EL) devices was investigated. The external quantum and luminous efficiencies were found to improve by annealing. The investigation of the effect of annealing on charge injection in hole-only and electron-only devices has revealed that while hole injection from the ITO electrode into the hole-transport layer is not affected by the annealing, electron injection from the MgAg electrode into the Alq<sub>3</sub> layer is enhanced by the annealing. It is concluded that improved charge balance due to the enhanced electron injection by the annealing is responsible for the improvement of the performance of the org. EL device.  
IT 185690-41-9P, 4,4',4''-Tris[2-naphthyl(phenyl)amino]triphenylamine  
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PRP (Properties); PYP (Physical process); SPN (Synthetic preparation); PREP (Preparation); PROC (Process); USES

(Uses)

(effect of annealing of org. thin films on charge injection in org. electroluminescent devices)

RN 185690-41-9 CAPPLUS

CN 1,4-Benzenediamine, N-2-naphthalenyl-N',N'-bis[4-(2-naphthalenylphenylamino)phenyl]-N-phenyl- (9CI) (CA INDEX NAME)



CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

Section cross-reference(s): 22, 72, 76

ST annealing org thin film electroluminescent device charge injection; OLED annealing electron injection hole transport layer

IT Annealing

Electric current-potential relationship

(effect of annealing of org. thin films on charge injection in org. electroluminescent devices)

IT Hole mobility

(in hole-transporting layers; effect of annealing of org. thin films on charge injection in org. electroluminescent devices)

IT Electron transport

Hole transport

(injection; effect of annealing of org. thin films on charge injection in org. electroluminescent devices)

IT Cyclic voltammetry

Oxidation, electrochemical

(of hole-transporting layers; effect of annealing of org. thin films on charge injection in org. electroluminescent devices)

IT Electroluminescent devices

(thin-film; effect of annealing of org. thin films on charge injection in org. electroluminescent devices)

IT 7439-95-4, Magnesium, uses

RL: DEV (Device component use); USES (Uses)

(effect of annealing of org. thin films on charge injection in org. electroluminescent devices)

IT 134008-76-7P 185690-41-9P, 4,4',4'''-Tris[2-

naphthyl(phenyl)amino]triphenylamine

RL: DEV (Device component use); PEP (Physical, engineering or chemical

process); PRP (Properties); PYP (Physical process); SPN (Synthetic preparation); PREP (Preparation); PROC (Process); USES (Uses)

(effect of annealing of org. thin films on charge injection in org. electroluminescent devices)

IT 2085-33-8, Alq3 50926-11-9, Indium tin oxide 117665-21-1, Magnesium 90.91, silver 9.09 (atomic)

RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)

(effect of annealing of org. thin films on charge injection in org. electroluminescent devices)

IT 135-88-6, N-Phenyl-2-naphthylamine 1591-31-7, 4-Iodobiphenyl 4181-20-8, Tris(4-iodophenyl)amine 84161-87-5, N,N-Diphenylbenzidine

RL: RCT (Reactant); RACT (Reactant or reagent)

(effect of annealing of org. thin films on charge injection in org. electroluminescent devices with hole-transporting layers prep'd. using)

IT 7440-22-4, Silver, uses

RL: DEV (Device component use); USES (Uses)

(electrode; effect of annealing of org. thin films on charge injection in org. electroluminescent devices)

REFERENCE COUNT: 17 THERE ARE 17 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L48 ANSWER 6 OF 39 CAPLUS COPYRIGHT 2003 ACS

ACCESSION NUMBER: 2002:849756 CAPLUS

DOCUMENT NUMBER: 137:360139

TITLE: Double-spiro organic compounds and electroluminescent devices

INVENTOR(S): Kim, Kong-Kyeum; Son, Se-Hwan; Yoon, Seok-Hee; Bae, Jae-Soo; Lee, Youn-Gu; Im, Sung-Gap; Kim, Ji-Eun; Lee, Jae-Chol

PATENT ASSIGNEE(S): LG Chem, Ltd., S. Korea

SOURCE: PCT Int. Appl., 117 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

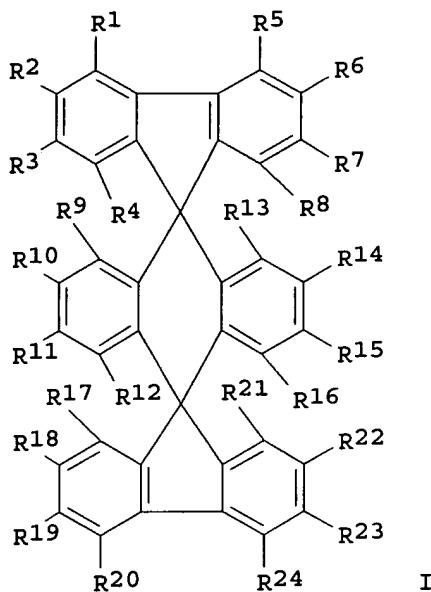
LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2002088274	A1	20021107	WO 2002-KR458	20020318
W: CN, JP				
RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR				
EP 1294823	A1	20030326	EP 2002-705589	20020318
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI, CY, TR				
PRIORITY APPLN. INFO.:			KR 2001-23038	A 20010427
			KR 2001-23039	A 20010427
			WO 2002-KR458	W 20020318
OTHER SOURCE(S):		MARPAT 137:360139		

GI

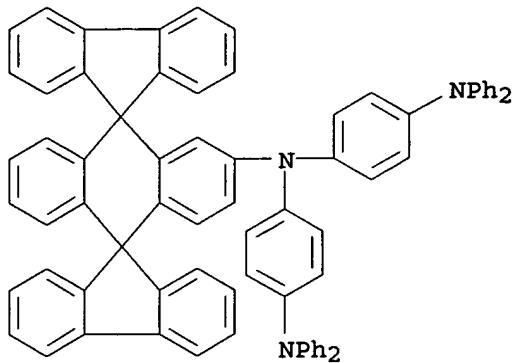


AB Double-spiro org. compds. are claimed which are described by the general formula I (R1-24 = independently selected substituents not all of which are H). Light-emitting, hole-transporting, and electron-transporting materials comprising the compds. are also described. Electroluminescent materials comprising the compds, including deposited films, methods for depositing the materials, and org. electroluminescent devices employing the materials, and method for fabricating the devices, are also described.

IT 474688-56-7P  
RL: DEV (Device component use); SPN (Synthetic preparation);  
PREP (Preparation); USES (Uses)  
(double-spiro org. compds. and electroluminescent devices  
using them)

RN 474688-56-7 CAPLUS

CN 1,4-Benzenediamine, N-[4-(diphenylamino)phenyl]-N-dispiro[9H-fluorene-9,9'-(10'H)-anthracene-10',9''-[9H]fluoren]-2'-yl-N',N'-diphenyl- (9CI)  
(CA INDEX NAME)



IC ICM C09K011-06  
 ICS C07C013-72  
 CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)  
     Section cross-reference(s): 24, 76  
 ST double spiro org compd electroluminescent device  
 IT Semiconductor device fabrication  
     (double-spiro org. compds. and electroluminescent devices using them)  
 IT Spiro compounds  
     RL: DEV (Device component use); USES (Uses)  
     (double-spiro org. compds. and electroluminescent devices using them)  
 IT Luminescent substances  
     (electroluminescent; double-spiro org. compds. and electroluminescent devices using them)  
 IT Vapor deposition process  
     (of double-spiro org. compds.)  
 IT Electroluminescent devices  
     (org.; double-spiro org. compds. and electroluminescent devices using them)  
 IT 159-56-8 474687-62-2D, derivs. 474687-68-8D, derivs. 474687-72-4  
     474687-74-6D, derivs. 474687-77-9D, derivs. 474687-79-1D, derivs.  
     474687-89-3 474687-90-6 474687-93-9 474687-95-1 474687-97-3  
     474688-01-2 474688-04-5 474688-09-0 474688-10-3 474688-11-4  
     474688-12-5 474688-13-6 474688-14-7 474688-15-8 474688-16-9  
     474688-17-0 474688-18-1 474688-19-2 474688-20-5 474688-21-6  
     474688-22-7 474688-23-8 474688-25-0 474688-26-1 474688-27-2  
     474688-28-3 474688-29-4 474688-30-7 474688-31-8 474688-32-9  
     474688-33-0 474688-34-1 474688-35-2 474688-36-3 474688-37-4  
     474688-38-5 474688-39-6 474688-40-9 474688-41-0 474688-42-1  
     474688-43-2 474688-44-3 474688-45-4 474688-46-5 474688-47-6  
     474688-48-7 474688-50-1 474688-52-3 474688-54-5 474688-59-0  
     474688-61-4 474688-62-5 474688-63-6 474688-64-7 474688-65-8  
     474688-66-9 474688-67-0 474688-68-1 474688-69-2  
     RL: DEV (Device component use); USES (Uses)  
     (double-spiro org. compds. and electroluminescent devices using them)  
 IT 474687-62-2P 474687-68-8P 474687-70-2P 474687-74-6P 474687-77-9P  
     474687-79-1P 474687-82-6P 474687-85-9P 474687-87-1P 474687-88-2P

RL: DEV (Device component use); RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent); USES (Uses) (double-spiro org. compds. and electroluminescent devices using them)

IT 474687-91-7P 474687-92-8P 474687-94-0P 474687-96-2P 474687-98-4P  
474687-99-5P 474688-00-1P 474688-02-3P 474688-03-4P 474688-05-6P  
474688-06-7P 474688-07-8P 474688-08-9P 474688-24-9P 474688-49-8P  
474688-51-2P 474688-53-4P 474688-55-6P 474688-56-7P  
474688-57-8P 474688-58-9P 474688-60-3P

RL: DEV (Device component use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses) (double-spiro org. compds. and electroluminescent devices using them)

IT 84-54-8, 2-Methylanthraquinone 86-74-8, Carbazole 90-30-2 98-80-6, Phenylboronic acid 121-43-7, Trimethylborate 121-44-8, Triethylamine, reactions 122-39-4, Diphenylamine, reactions 128-08-5, N-Bromosuccinimide 128-37-0, 2,6-Di-tert-butyl-4-methylphenol, reactions 504-63-2, 1,3-Propanediol 523-27-3, 9,10-Dibromoanthracene 530-48-3, 1,1-Diphenylethylene 531-91-9, Diphenylbenzidine 572-83-8, 2-Bromoanthraquinone 580-13-2, 2-Bromonaphthalene 626-39-1, 1,3,5-Tribromobenzene 633-70-5, 2,6-Dibromoanthraquinone 1564-64-3, 9-Bromoanthracene 2052-07-5, 2-Bromobiphenyl 7726-95-6, Bromine, reactions 17088-21-0, 1-Vinylpyrene 17919-34-5 23674-20-6, 9-Bromo-10-phenylanthracene 25069-74-3 28611-39-4, 4-(Dimethylamino)phenylboronic acid 201731-79-5, 2-Bromo-9,10-diphenylanthracene 201802-67-7 288105-04-4 334658-75-2 400607-16-1 474688-72-7 474688-73-8 474688-74-9 474688-77-2 474688-80-7  
474688-81-8

RL: RCT (Reactant); RACT (Reactant or reagent) (double-spiro org. compds. and electroluminescent devices using them)

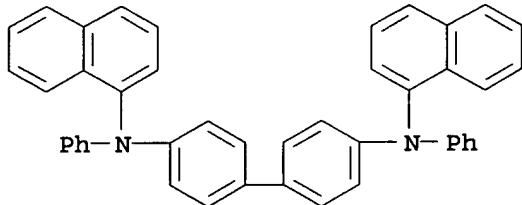
IT 6363-86-6P 13249-58-6P 22072-53-3P 85637-31-6P 103068-20-8P  
474688-70-5P 474688-71-6P 474688-75-0P 474688-76-1P 474688-78-3P  
474688-79-4P

RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent) (double-spiro org. compds. and electroluminescent devices using them)

REFERENCE COUNT: 3 THERE ARE 3 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L48 ANSWER 7 OF 39 CAPLUS COPYRIGHT 2003 ACS  
ACCESSION NUMBER: 2002:848338 CAPLUS  
DOCUMENT NUMBER: 137:360136  
TITLE: Electroluminescent device with aryl ring and amine compounds  
INVENTOR(S): Igarashi, Tatsuya  
PATENT ASSIGNEE(S): Fuji Photo Film Co., Ltd., Japan  
SOURCE: Jpn. Kokai Tokkyo Koho, 33 pp.  
CODEN: JKXXAF  
DOCUMENT TYPE: Patent  
LANGUAGE: Japanese  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2002324678	A2	20021108	JP 2001-129572	20010426
PRIORITY APPLN. INFO.:			JP 2001-129572	20010426
OTHER SOURCE(S):		MARPAT 137:360136		
AB	The invention refers to an electroluminescent device comprising an amine compd. with at least two rings and the compd. Ar(Ar11Ar12)(Ar21Ar22)(Ar31Ar32) [Ar = aryl or heteroaryl; Ar11,21,31 = arylene; Ar12,22,32 = H or substituent; where at least one of Ar11-32 is a condensed ring aryl or heteroaryl] in the luminescent layer.			
IT	123847-85-8P, NPD RL: DEV (Device component use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses) (electroluminescent device with aryl ring and amine compds.)			
RN	123847-85-8 CAPLUS			
CN	[1,1'-Biphenyl]-4,4'-diamine, N,N'-di-1-naphthalenyl-N,N'-diphenyl- (9CI) (CA INDEX NAME)			



IC ICM H05B033-14  
ICS C09K011-06

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

ST electroluminescent device amine arylene

IT Electroluminescent devices  
(electroluminescent device with aryl ring and amine compds.)

IT 313950-73-1  
RL: DEV (Device component use); USES (Uses)  
(electroluminescent device with aryl ring and amine compds.)

IT 58328-31-7P 123847-85-8P, NPD 151965-47-8P 349666-25-7P  
349666-26-8P 349666-27-9P 349666-28-0P 349666-29-1P 349669-77-8P  
349669-79-0P 349669-81-4P  
RL: DEV (Device component use); SPN (Synthetic preparation);  
PREP (Preparation); USES (Uses)  
(electroluminescent device with aryl ring and amine compds.)

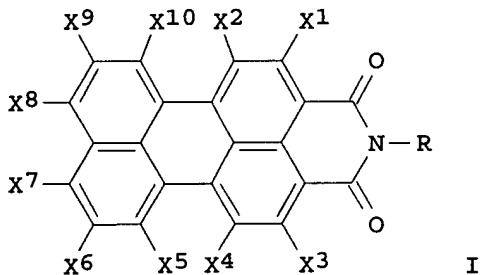
IT 90-44-8, 9(10H)-Anthracenone 626-39-1, 1,3,5-Tribromobenzene 636-28-2,  
1,2,4,5-Tetrabromobenzene 7511-49-1 68572-88-3 349666-24-6  
474502-16-4  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(electroluminescent device with aryl ring and amine compds.)

IT 349666-30-4P 474302-40-4P  
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT  
(Reactant or reagent)

(electroluminescent device with aryl ring and amine compds.)

L48 ANSWER 8 OF 39 CAPLUS COPYRIGHT 2003 ACS  
ACCESSION NUMBER: 2002:673167 CAPLUS  
DOCUMENT NUMBER: 137:223887  
TITLE: Perylenedicarboxyimide derivatives and organic  
electroluminescent devices using them  
INVENTOR(S): Nakatsuka, Masakatsu; Shimamura, Takehiko; Ishida,  
Tsutomu; Totani, Yoshiyuki  
PATENT ASSIGNEE(S): Mitsui Chemicals Inc., Japan  
SOURCE: Jpn. Kokai Tokkyo Koho, 65 pp.  
CODEN: JKXXAF  
DOCUMENT TYPE: Patent  
LANGUAGE: Japanese  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2002252084	A2	20020906	JP 2001-48071	20010223
PRIORITY APPLN. INFO.:			JP 2001-48071	20010223
OTHER SOURCE(S):	MARPAT	137:223887		
GI				



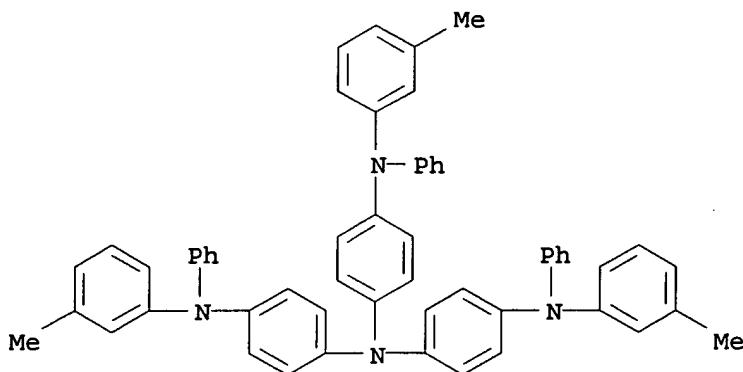
AB Perylene-3,4-dicarboxyimide derivs. I [R = H, optional straight, branched or cyclic alkyl or alkenyl, (un)substituted aralkyl or aryl; X1-10 = H, halo, straight, branched or cyclic alkyl or alkoxy, (un)substituted aryl or aryloxy, nitro, (un)substituted amino] and org. electroluminescent devices including I in (emission layers or electron/hole injection transporting) layers between pair of electrodes, are claimed. The derivs. are superior in luminous efficiency, and offer org. electroluminescence element which radiates in high brightness.

IT 124729-98-2P

RL: DEV (Device component use); IMF (Industrial manufacture);  
PREP (Preparation); USES (Uses)  
(hole injection/transport layer; novel perylenedicarboxyimide derivs.  
and their electroluminescent devices)

RN 124729-98-2 CAPLUS

CN 1,4-Benzenediamine, N-(3-methylphenyl)-N'-bis[4-[(3-methylphenyl)phenylamino]phenyl]-N-phenyl- (9CI) (CA INDEX NAME)

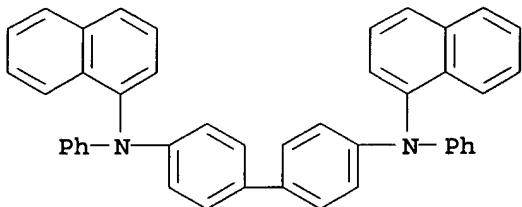


IT 123847-85-8P

RL: DEV (Device component use); IMF (Industrial manufacture);  
PREP (Preparation); USES (Uses)  
(light-emitting layer contg.; novel perylenedicarboxyimide derivs. and  
their electroluminescent devices)

RN 123847-85-8 CAPLUS

CN [1,1'-Biphenyl]-4,4'-diamine, N,N'-di-1-naphthalenyl-N,N'-diphenyl- (9CI)  
(CA INDEX NAME)



IC ICM H05B033-14

ICS C09K011-06; H05B033-22

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

Section cross-reference(s): 27

ST electroluminescent device perylenedicarboxyimide emission electron hole transport

IT Fluorescent substances

(novel perylenedicarboxyimide derivs. and their electroluminescent devices)

IT Electroluminescent devices

(novel perylenedicarboxyimide derivs. for)

IT 1450-63-1P

RL: DEV (Device component use); IMF (Industrial manufacture); PREP

(Preparation); USES (Uses)  
(blue light-emitting layer component; novel perylenedicarboxyimide  
derivs. and their electroluminescent devices)

IT 2085-33-8P 138372-67-5P 150405-69-9P  
RL: DEV (Device component use); IMF (Industrial manufacture); PREP  
(Preparation); USES (Uses)  
(electron injection/transport layer; novel perylenedicarboxyimide  
derivs. and their electroluminescent devices)

IT 38215-36-0P  
RL: DEV (Device component use); IMF (Industrial manufacture); PREP  
(Preparation); USES (Uses)  
(green light-emitting layer component; novel perylenedicarboxyimide  
derivs. and their electroluminescent devices)

IT 65181-78-4P 124729-98-2P  
RL: DEV (Device component use); IMF (Industrial manufacture);  
PREP (Preparation); USES (Uses)  
(hole injection/transport layer; novel perylenedicarboxyimide derivs.  
and their electroluminescent devices)

IT 24601-13-6P 123847-85-8P 146162-52-9P  
RL: DEV (Device component use); IMF (Industrial manufacture);  
PREP (Preparation); USES (Uses)  
(light-emitting layer contg.; novel perylenedicarboxyimide derivs. and  
their electroluminescent devices)

IT 25067-59-8P 33955-44-1P, 1H-Perylo[3,4-cd]pyridine-1,3(2H)-dione  
59681-17-3P 59681-19-5P 59681-21-9P 78830-84-9P 165261-27-8P  
165261-30-3P 200066-01-9P 200066-02-0P 455949-33-4P 455949-34-5P  
455949-35-6P 455949-36-7P 455949-37-8P 455949-38-9P 455949-39-0P  
455949-48-1P 455949-69-6P 455950-00-2P 455950-12-6P 455950-13-7P  
455950-14-8P 455950-18-2P 455950-19-3P 455950-20-6P 455950-21-7P  
455950-24-0P 455950-27-3P 455950-30-8P 455950-31-9P 455950-38-6P  
455950-42-2P 455950-43-3P 455950-44-4P 455950-65-9P 455950-82-0P  
455950-92-2P 455950-96-6P 455951-02-7P 455951-03-8P 455951-05-0P  
455951-07-2P 455951-08-3P 455951-09-4P 455951-11-8P 455951-12-9P  
455951-36-7P 455951-37-8P 455951-38-9P  
RL: DEV (Device component use); IMF (Industrial manufacture); PREP  
(Preparation); USES (Uses)  
(novel perylenedicarboxyimide derivs. and their electroluminescent  
devices)

L48 ANSWER 9 OF 39 CAPLUS COPYRIGHT 2003 ACS  
ACCESSION NUMBER: 2002:611729 CAPLUS  
DOCUMENT NUMBER: 137:161181  
TITLE: Tertiary arylamine organic electroluminescent  
materials and devices employing the materials  
INVENTOR(S): Matsuo, Shinji; Ishii, Kazuo; Miyazaki, Hiroshi; Yuki,  
Toshinao; Nakada, Hitoshi; Murayama, Ryuji; Sawada,  
Yasuhiko; Naijo, Tsuyoshi; Fukuda, Yoshinori  
PATENT ASSIGNEE(S): Nippon Steel Chemical Co., Ltd., Japan; Pioneer  
Corporation; Tohoku Pioneer Corporation  
SOURCE: Eur. Pat. Appl., 15 pp.  
CODEN: EPXXDW  
DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

## PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 1231252	A2	20020814	EP 2002-250887	20020208
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR				
JP 2002235077	A2	20020823	JP 2001-32835	20010208
US 2002146590	A1	20021010	US 2002-60203	20020201

PRIORITY APPLN. INFO.: JP 2001-32835 A 20010208

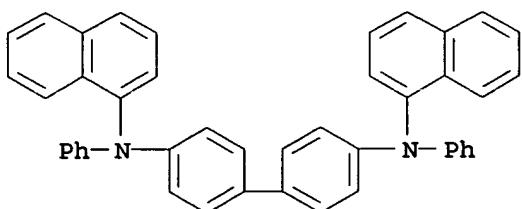
AB Org. electroluminescent materials are described which comprise a tertiary arylamine contg. 2 to 4-N atoms each forming a triarylamine, characterized in that the org. electroluminescent material comprises .ltoreq.1 wt.% of impurity compds. possessing one less N atom forming a triarylamine group than the tertiary arylamine compd. and/or .ltoreq.2 wt.% or less of impurity compds. possessing one more N atom forming a triarylamine group than the tertiary arylamine compd. Org. electroluminescent devices employing the org. electroluminescent materials are also described. A process for prep. the org. electroluminescent materials is disclosed which entails purifying by sublimation or distn. the tertiary arylamine obtained by the reaction of a haloaryl compd. contg. .gtoreq.1 halogen atoms in the arom. ring with an arylamine in the presence of a catalyst until the tertiary arylamine contains .ltoreq.1 wt% compds. possessing one less N atom forming a triarylamino group than the tertiary arylamine compd. or .ltoreq.2 wt% compds. possessing one more N atom forming a diarylamino group than the tertiary arylamino compd.

IT 123847-85-8P, N,N'-Di(naphthalen-1-yl)-N,N'-diphenylbenzidine

RL: DEV (Device component use); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(hole-transporting layer; tertiary arylamine org.  
electroluminescent materials and devices employing the  
materials)

RN 123847-85-8 CAPLUS

CN [1,1'-Biphenyl]-4,4'-diamine, N,N'-di-1-naphthalenyl-N,N'-diphenyl- (9CI)  
(CA INDEX NAME)

IT 123847-85-8DP, naphthalenephenylamine derivs.

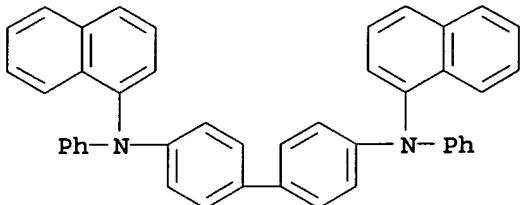
RL: DEV (Device component use); MOA (Modifier or additive use); SPN (Synthetic preparation); TEM (Technical or engineered material use);

**PREP (Preparation); USES (Uses)**

(impurity in hole-transporting layer; tertiary arylamine org.  
electroluminescent materials and devices employing the  
materials)

RN 123847-85-8 CAPLUS

CN [1,1'-Biphenyl]-4,4'-diamine, N,N'-di-1-naphthalenyl-N,N'-diphenyl- (9CI)  
(CA INDEX NAME)



IC ICM C09K011-06

ICS H05B033-14; H01L051-20

CC 73-5 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

Section cross-reference(s): 22, 25, 76

ST tertiary arylamine org electroluminescent material device impurity

IT Amines, uses

RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)

(aryl, tertiary; tertiary arylamine org. electroluminescent materials and devices employing the materials)

IT Luminescent substances

(electroluminescent; tertiary arylamine org. electroluminescent materials and devices employing the materials)

IT Purification

(sublimation or distn.; tertiary arylamine org. electroluminescent materials contg. impurities with desired concn. controlled by)

IT Electroluminescent devices

(tertiary arylamine org. electroluminescent materials and devices employing the materials)

IT 7440-05-3, Palladium, uses

RL: CAT (Catalyst use); USES (Uses)

(NPB synthesized using catalyst contg.; tertiary arylamine org. electroluminescent materials and devices employing the materials)

IT 95-47-6, Ortho-xylene, uses 98-95-3, Nitrobenzene, uses 584-08-7, Potassium carbonate 865-48-5 7681-65-4, Copper(I) iodide

RL: NUU (Other use, unclassified); USES (Uses)

(NPB synthesized using; tertiary arylamine org. electroluminescent materials and devices employing the materials)

IT 90-30-2, 1-Naphthylphenylamine 3001-15-8, 4,4'-Diodobiphenyl

RL: RCT (Reactant); RACT (Reactant or reagent)

(NPB synthesized using; tertiary arylamine org. electroluminescent materials and devices employing the materials)

IT 7789-24-4, Lithium fluoride, uses

RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)  
(electron-injecting layer; tertiary arylamine org. electroluminescent materials and devices employing the materials)

IT 147-14-8, Copper phthalocyanine  
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)  
(hole-injecting layer; tertiary arylamine org. electroluminescent materials and devices employing the materials)

IT 65181-78-4, TPD  
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PRP (Properties); PYP (Physical process); PROC (Process); USES (Uses)  
(hole-transporting layer; tertiary arylamine org. electroluminescent materials and devices employing the materials)

IT 123847-85-8P, N,N'-Di(naphthalen-1-yl)-N,N'-diphenylbenzidine  
RL: DEV (Device component use); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)  
(hole-transporting layer; tertiary arylamine org. electroluminescent materials and devices employing the materials)

IT 154576-20-2 169224-62-8  
RL: DEV (Device component use); MOA (Modifier or additive use); PEP (Physical, engineering or chemical process); PRP (Properties); PYP (Physical process); PROC (Process); USES (Uses)  
(impurity in hole-transporting layer; tertiary arylamine org. electroluminescent materials and devices employing the materials)

IT 123847-85-8DP, naphthalenephenyldamine derivs. 131059-47-7P  
RL: DEV (Device component use); MOA (Modifier or additive use); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)  
(impurity in hole-transporting layer; tertiary arylamine org. electroluminescent materials and devices employing the materials)

IT 344396-72-1, IDE-120  
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)  
(luminescent layer; tertiary arylamine org. electroluminescent materials and devices employing the materials)

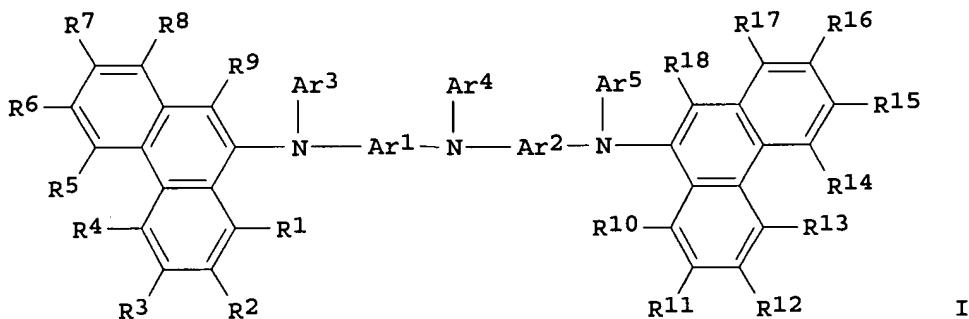
IT 2085-33-8, Tris(8-quinolinolato)aluminum  
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)  
(luminescent or electron-transporting layer; tertiary arylamine org. electroluminescent materials and devices employing the materials)

L48 ANSWER 10 OF 39 CAPLUS COPYRIGHT 2003 ACS

ACCESSION NUMBER: 2002:566255 CAPLUS  
DOCUMENT NUMBER: 137:124996  
TITLE: Preparation of phenanthryltrialamines as hole injection and transport materials for organic electroluminescent elements

INVENTOR(S): Tanaka, Hiroaki; Toba, Yasumasa  
 PATENT ASSIGNEE(S): Toyo Ink MFG. Co., Ltd., Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 13 pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2002212151	A2	20020731	JP 2001-5870	20010115
PRIORITY APPLN. INFO.:			JP 2001-5870	20010115
OTHER SOURCE(S):		CASREACT 137:124996; MARPAT 137:124996		
GI				

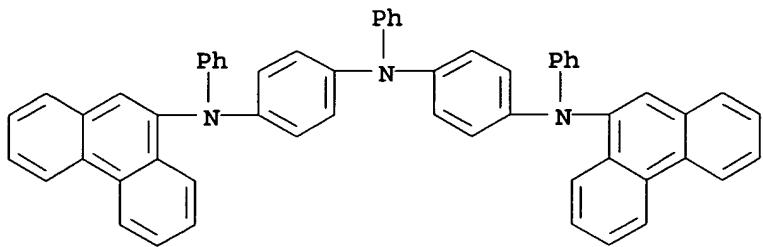


AB The compds. I (Ar<sub>1</sub>, Ar<sub>2</sub> = C<sub>6</sub>-14 arylene; Ar<sub>3</sub>, Ar<sub>4</sub>, Ar<sub>5</sub> = C<sub>6</sub>-14 aryl; R<sub>1</sub>-R<sub>18</sub> = H, C<sub>1</sub>-4 alkyl) are prep'd. 4,4'-Dibromotriphenylamine (9.3 g) was treated with 13.5 g 9-phenanthrylphenylamine in the presence of NaOBu-tert, palladium acetate, and (tert-Bu)<sub>3</sub>P at 120.degree. for 2 h to give 14.7 g I (Ar<sub>1</sub> = Ar<sub>2</sub> = 1,4-phenylene; Ar<sub>3</sub>-Ar<sub>5</sub> = Ph; R<sub>1</sub>-R<sub>18</sub> = H). An org. EL element having a hole transport layer contg. the compd. showed initial luminance 350 cd/m<sup>2</sup> at 12.5 mA/m<sup>2</sup>.

IT 443965-56-8P 443965-57-9P 443965-58-0P  
 443965-59-1P 443965-60-4P 443965-61-5P  
 443965-62-6P  
 RL: SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)  
 (prep'n. of phenanthryltrialamines for org. EL elements)

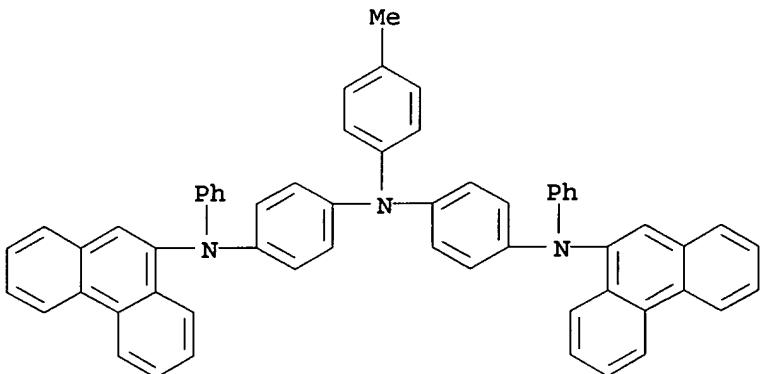
RN 443965-56-8 CAPLUS

CN 1,4-Benzenediamine, N-9-phenanthrenyl-N'-(1-(9-phenanthrenylphenylamino)phenyl)-N,N'-diphenyl- (9CI) (CA INDEX NAME)



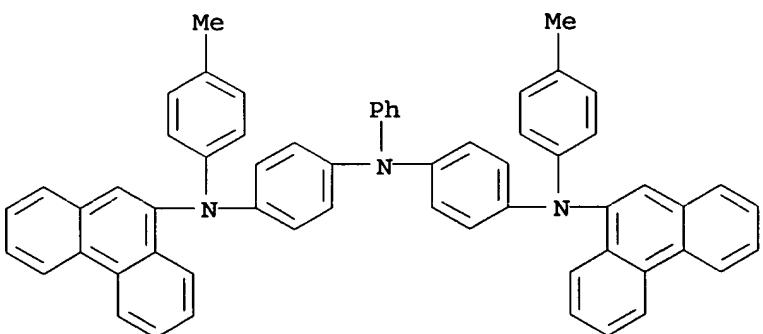
RN 443965-57-9 CAPLUS

CN 1,4-Benzenediamine, N-(4-methylphenyl)-N'-[1-(9-phenanthrenylphenylamino)phenyl]-N'-phenyl- (9CI) (CA INDEX NAME)



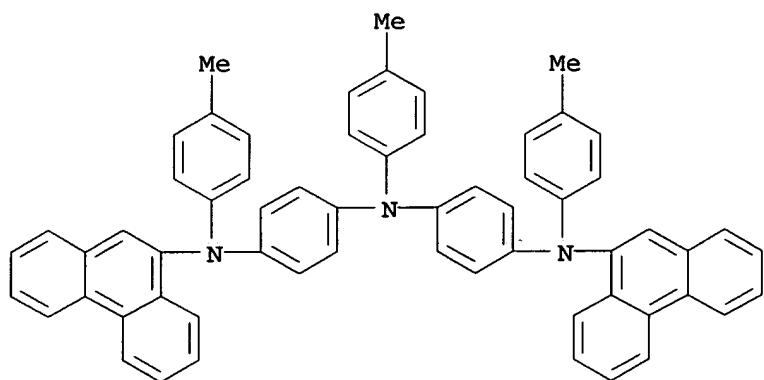
RN 443965-58-0 CAPLUS

CN 1,4-Benzenediamine, N-(4-methylphenyl)-N'-[1-[4-methylphenyl]-9-phenanthrenylamino]phenyl]-N-9-phenanthrenyl-N'-phenyl- (9CI) (CA INDEX NAME)



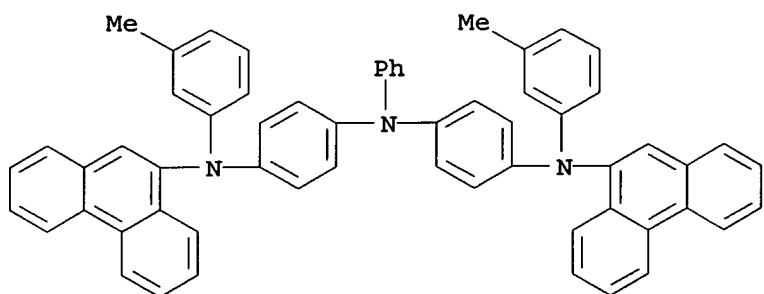
RN 443965-59-1 CAPLUS

CN 1,4-Benzenediamine, N,N'-bis(4-methylphenyl)-N-[1-[4-methylphenyl]-9-phenanthrenylamino]phenyl]-N'-9-phenanthrenyl- (9CI) (CA INDEX NAME)



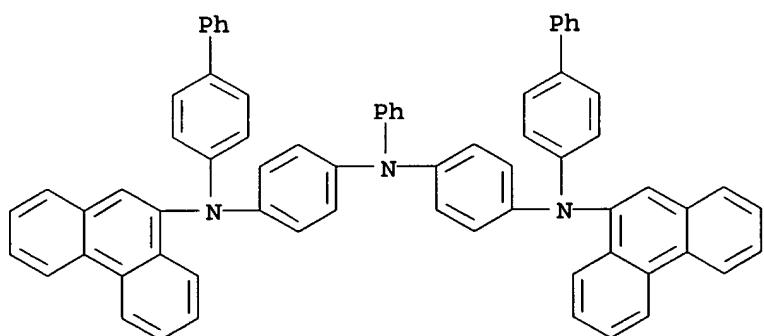
RN 443965-60-4 CAPLUS

CN 1,4-Benzenediamine, N-(3-methylphenyl)-N'-(1-[(3-methylphenyl)-9-phenanthrenylamino]phenyl)-N-9-phenanthrenyl-N'-phenyl- (9CI) (CA INDEX NAME)



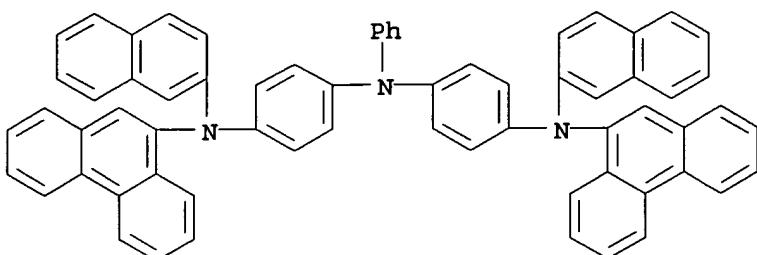
RN 443965-61-5 CAPLUS

CN 1,4-Benzenediamine, N-[1,1'-biphenyl]-4-yl-N'-(1-([1,1'-biphenyl]-4-yl)-9-phenanthrenylamino)phenyl)-N-9-phenanthrenyl-N'-phenyl- (9CI) (CA INDEX NAME)



RN 443965-62-6 CAPLUS

CN 1,4-Benzenediamine, N-2-naphthalenyl-N'-[1-(2-naphthalenyl-9-phenanthrenylamino)phenyl]-N-9-phenanthrenyl-N'-phenyl- (9CI) (CA INDEX NAME)



IC ICM C07C211-61

ICS C07C209-60; C09K011-06; H05B033-14; C07B061-00

CC 25-27 (Benzene, Its Derivatives, and Condensed Benzenoid Compounds)

Section cross-reference(s): 73

ST phenanthryltriamine prepn org EL element; hole injection transport material phenanthryltriamine

IT Electroluminescent devices

(prepн. of phenanthryltrialamines for org. EL elements)

IT 3920-79-4 79918-21-1 81090-53-1, 4,4'-Dibromotriphenylamine

100308-67-6 376652-63-0 443965-64-8 443965-65-9 443965-66-0

RL: RCT (Reactant); RACT (Reactant or reagent)

(prepн. of phenanthryltrialamines for org. EL elements)

IT 443965-56-8P 443965-57-9P 443965-58-0P

443965-59-1P 443965-60-4P 443965-61-5P

443965-62-6P 443965-63-7P

RL: SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(prepн. of phenanthryltrialamines for org. EL elements)

L48 ANSWER 11 OF 39 CAPLUS COPYRIGHT 2003 ACS

ACCESSION NUMBER: 2002:368916 CAPLUS

DOCUMENT NUMBER: 136:393041

TITLE: Organic electroluminescent devices

INVENTOR(S): Toguchi, Satoru; Ishikawa, Hitoshi; Tada, Hiroshi; Oda, Atsushi

PATENT ASSIGNEE(S): Japan

SOURCE: U.S. Pat. Appl. Publ., 87 pp.

CODEN: USXXCO

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	-----
US 2002058156	A1	20020516	US 2001-985657	20011105

JP 2002151263	A2	20020524	JP 2000-339603	20001107
JP 2002151264	A2	20020524	JP 2000-339604	20001107
JP 2002151265	A2	20020524	JP 2000-339605	20001107
PRIORITY APPLN. INFO.:			JP 2000-339603	A 20001107
			JP 2000-339604	A 20001107
			JP 2000-339605	A 20001107

OTHER SOURCE(S) : MARPAT 136:393041

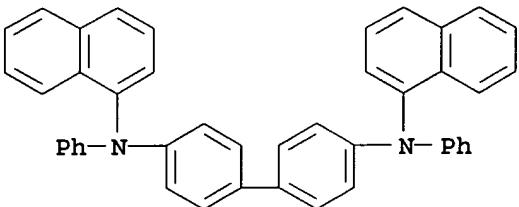
AB Org. electroluminescent devices comprising an anode; a cathode; and  
.gtoreq.1 org. thin film layers including a light-emitting layer  
sandwiched between said anode and said cathode ADIW .gtoreq.1 org. thin  
film layer contains a compd. including an (un)substituted  
cyclohexylidenemethine group.

IT 123847-85-8 181367-28-2 227939-49-3

RL: DEV (Device component use); USES (Uses)  
(org. electroluminescent devices employing  
cyclohexylidenemethine derivs.)

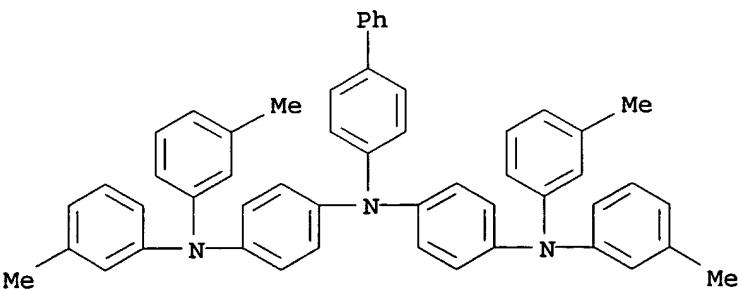
RN 123847-85-8 CAPLUS

CN [1,1'-Biphenyl]-4,4'-diamine, N,N'-di-1-naphthalenyl-N,N'-diphenyl- (9CI)  
(CA INDEX NAME)



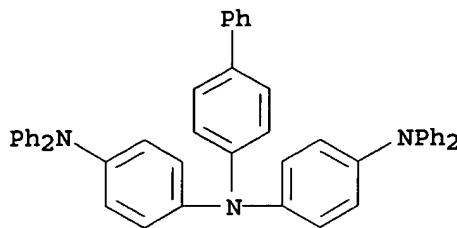
RN 181367-28-2 CAPLUS

CN 1,4-Benzenediamine, N-[1,1'-biphenyl]-4-yl-N-[4-[bis(3-methylphenyl)amino]phenyl]-N',N'-bis(3-methylphenyl)- (9CI) (CA INDEX NAME)



RN 227939-49-3 CAPLUS

CN 1,4-Benzenediamine, N-[1,1'-biphenyl]-4-yl-N-[4-(diphenylamino)phenyl]-N',N'-diphenyl- (9CI) (CA INDEX NAME)



IT 426218-52-2P 426218-53-3P 426218-60-2P

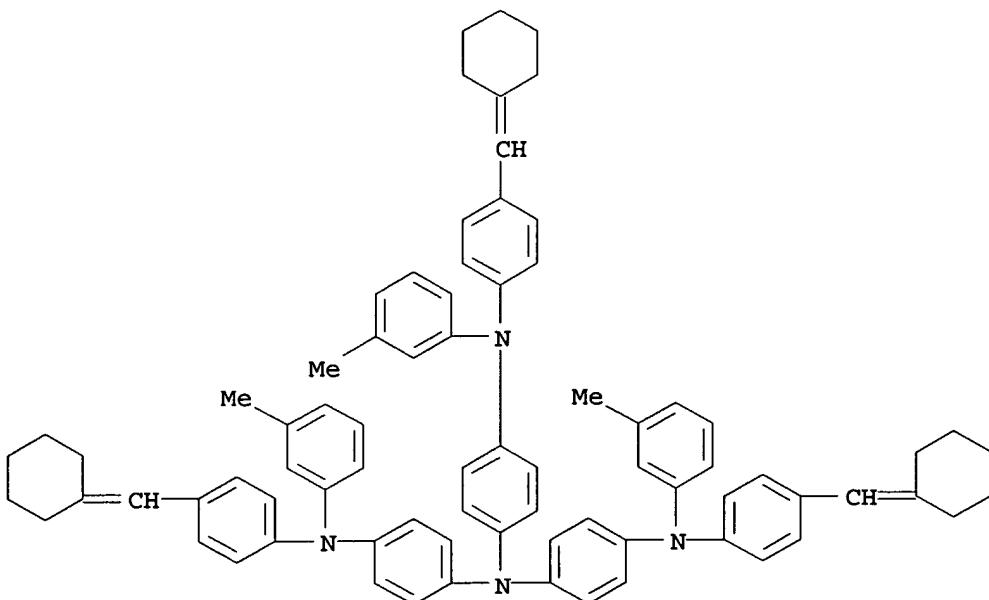
RL: DEV (Device component use); SPN (Synthetic preparation);

PREP (Preparation); USES (Uses)

(org. electroluminescent devices employing  
cyclohexylidenemethine derivs.)

RN 426218-52-2 CAPLUS

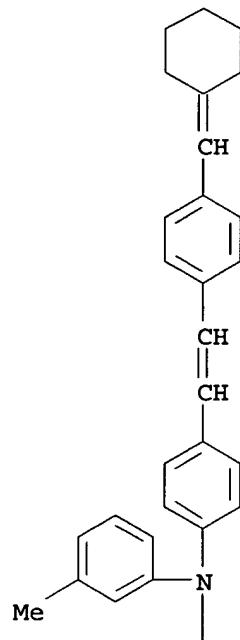
CN 1,4-Benzenediamine, N-[4-(cyclohexylidenemethyl)phenyl]-N',N'-bis[4-[[4-(cyclohexylidenemethyl)phenyl](3-methylphenyl)amino]phenyl]-N-(3-methylphenyl)- (9CI) (CA INDEX NAME)



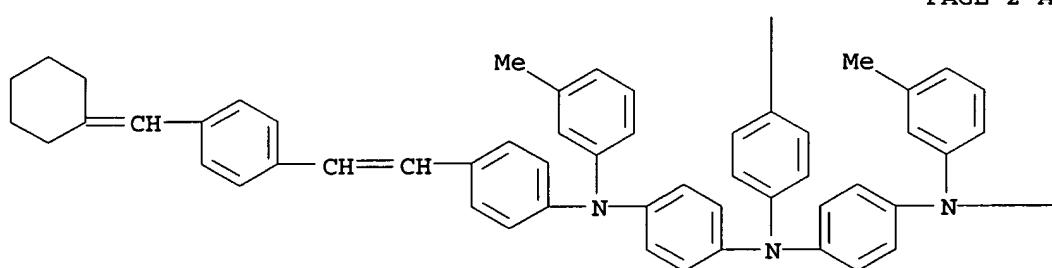
RN 426218-53-3 CAPLUS

CN 1,4-Benzenediamine, N-[4-[2-[4-(cyclohexylidenemethyl)phenyl]ethenyl]phenyl]-N',N'-bis[4-[[4-[2-[4-(cyclohexylidenemethyl)phenyl]ethenyl]phenyl](3-methylphenyl)amino]phenyl]-N-(3-methylphenyl)- (9CI) (CA INDEX NAME)

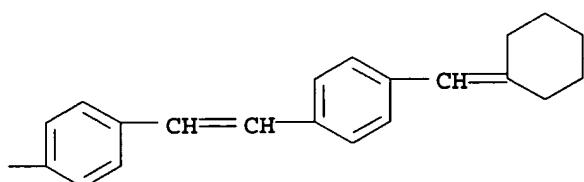
PAGE 1-A



PAGE 2-A

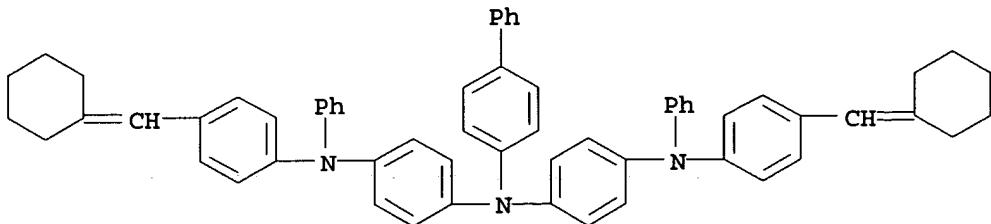


PAGE 2-B



RN 426218-60-2 CAPLUS  
CN 1,4-Benzenediamine, N-[1,1'-biphenyl]-4-yl-N'-(4-

(cyclohexylidenemethyl)phenyl]-N-[4-[[4-(cyclohexylidenemethyl)phenyl]phenylamino]phenyl]-N'-phenyl- (9CI) (CA INDEX NAME)



IC H05B033-12  
 NCL 428690000  
 CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)  
 Section cross-reference(s): 25, 76  
 ST org electroluminescent device cyclohexylidenemethine deriv  
 IT Electroluminescent devices  
     (org.; org. electroluminescent devices employing cyclohexylidenemethine derivs.)  
 IT 2085-33-8, Alq3 15082-28-7, 2-(4-Biphenylyl)-5-(4-t-butylphenyl)-1,3,4-oxadiazole 37271-44-6 50926-11-9, ITO 61843-06-9 65181-78-4,  
 N,N'-Diphenyl-N,N'-bis(3-methylphenyl)-1,1'-biphenyl-4,4'-diamine  
 123847-85-8 150405-69-9 163226-12-8 181367-28-2  
 194214-31-8 194794-43-9 227939-49-3 426218-62-4  
 426218-63-5  
 RL: DEV (Device component use); USES (Uses)  
     (org. electroluminescent devices employing cyclohexylidenemethine derivs.)  
 IT 7440-46-2, Cesium, uses  
 RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)  
     (org. electroluminescent devices employing cyclohexylidenemethine derivs.)  
 IT 426218-12-4P 426218-13-5P 426218-14-6P 426218-15-7P 426218-16-8P  
 426218-17-9P 426218-18-0P 426218-19-1P 426218-20-4P 426218-21-5P  
 426218-22-6P 426218-23-7P 426218-24-8P 426218-25-9P 426218-26-0P  
 426218-27-1P 426218-28-2P 426218-30-6P 426218-31-7P 426218-32-8P  
 426218-33-9P 426218-34-0P 426218-35-1P 426218-36-2P 426218-37-3P  
 426218-38-4P 426218-40-8P 426218-41-9P 426218-42-0P 426218-44-2P  
 426218-46-4P 426218-47-5P 426218-49-7P 426218-50-0P  
 426218-52-2P 426218-53-3P 426218-54-4P 426218-55-5P  
 426218-56-6P 426218-59-9P 426218-60-2P 426218-61-3P  
 426252-99-5P 426253-00-1P 426253-01-2P  
 RL: DEV (Device component use); SPN (Synthetic preparation);  
 PREP (Preparation); USES (Uses)  
     (org. electroluminescent devices employing cyclohexylidenemethine derivs.)  
 IT 62-53-3, Aniline, reactions 83-53-4, 1,4-Dibromonaphthalene 106-49-0,  
 p-Toluidine, reactions 108-94-1, Cyclohexanone, reactions 122-52-1,

Triethyl phosphite 128-08-5, N-Bromosuccinimide 523-27-3,  
9,10-Dibromoanthracene 589-15-1, 4-Bromobenzyl bromide 589-17-3,  
.alpha.-Chloro-4-bromotoluene 626-39-1, 1,3,5-Tribromobenzene  
4316-58-9, Tris(4-bromophenyl)amine 19930-62-2 33861-11-9  
56752-35-3, 3,9-Dibromoperylene 72393-15-8 97136-66-8 98327-87-8,  
2,2'-Bis(diphenylphosphino)-1,1'-binaphthyl 121848-75-7,  
10,10'-Dibromo-9,9'-bianthryl 128055-74-3, 2,2',7,7'-Tetrabromo-9,9'-  
spirobifluorene 227010-27-7 252646-79-0 426218-07-7 426218-09-9  
426218-29-3 426218-39-5 426218-57-7 426218-58-8 426252-98-4

RL: RCT (Reactant); RACT (Reactant or reagent)  
(org. electroluminescent devices employing cyclohexylidenemethine  
derivs.)

IT 57438-72-9P 72436-33-0P 426218-05-5P 426218-06-6P 426218-08-8P  
426218-10-2P 426218-11-3P 426218-43-1P 426218-45-3P 426218-48-6P  
426218-51-1P  
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT  
(Reactant or reagent)  
(org. electroluminescent devices employing cyclohexylidenemethine  
derivs.)

L48 ANSWER 12 OF 39 CAPLUS COPYRIGHT 2003 ACS

ACCESSION NUMBER: 2002:229670 CAPLUS

DOCUMENT NUMBER: 137:20673

TITLE: Synthesis and characterization of a two-photon  
absorbing and luminescent aminofluorenyl polymer

AUTHOR(S): Belfield, Kevin D.; Morales, Alma; Chapela, Victor M.;  
Percino, Judith

CORPORATE SOURCE: Dep. Chem. Sch. Optics, Univ. Central Florida,  
Orlando, FL, 32816, USA

SOURCE: Polymer Preprints (American Chemical Society, Division  
of Polymer Chemistry) (2002), 43(1), 104-105

CODEN: ACPPAY; ISSN: 0032-3934

PUBLISHER: American Chemical Society, Division of Polymer  
Chemistry

DOCUMENT TYPE: Journal; (computer optical disk)

LANGUAGE: English

AB The prepn., structural characterization, and photophys. characterization  
of diphenylaminofluorenyl polymer as well as 9,9-didecyl-2,7-  
bis[phenyl(9,9-didecyl-2-(N,N-diphenylamino)fluorenyl)amino]fluorene model  
compd. produced via Ullmann condensation were described. The high  
two-photon absorptivity, luminescence fluorescence properties, and high  
soly. made these compds. good candidates for two-photon based  
applications.

IT 434334-64-2P

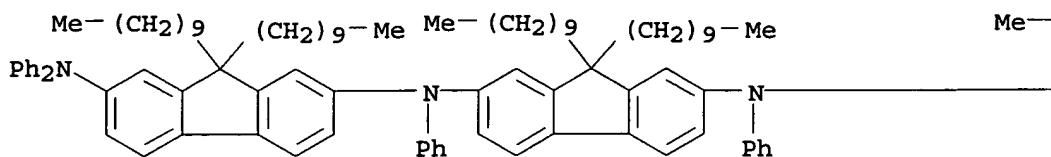
RL: PRP (Properties); SPN (Synthetic preparation); PREP  
(Preparation)

(prepn. as model for two-photon absorbing and luminescent  
aminofluorenyl polymer)

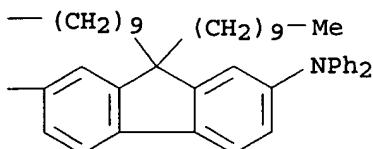
RN 434334-64-2 CAPLUS

CN 9H-Fluorene-2,7-diamine, 9,9-didecyl-N,N'-bis[9,9-didecyl-7-  
(diphenylamino)-9H-fluoren-2-yl]-N,N'-diphenyl- (9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 1-B



CC 35-5 (Chemistry of Synthetic High Polymers)  
Section cross-reference(s): 73

ST diphenylaminofluorenyl polymer prepn absorption fluorescence spectra

IT Polyamines  
RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)  
(fluorenyl-contg.; prepn. and UV-visible absorption and fluorescence spectra of)

IT Fluorescence  
UV and visible spectra  
(of model compd. contg. three nonconjugated fluorenyl rings and of aminofluorenyl polymer)

IT 434334-65-3P 434334-66-4P  
RL: PRP (Properties); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)  
(prep. and UV-visible absorption and fluorescence spectra of)

IT 434334-63-1P  
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)  
(prep. and reaction with (didecyliodofluorenyl)diphenylamine and polymn. with didecyldiodofluorene)

IT 434334-62-0P  
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)  
(prep. and reaction with didecyldiphenylaminofluorene)

IT 434334-64-2P  
RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)  
(prep. as model for two-photon absorbing and luminescent aminofluorenyl polymer)

IT 122-39-4, Diphenylamine, reactions  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(reaction with didecyldiodofluorene)

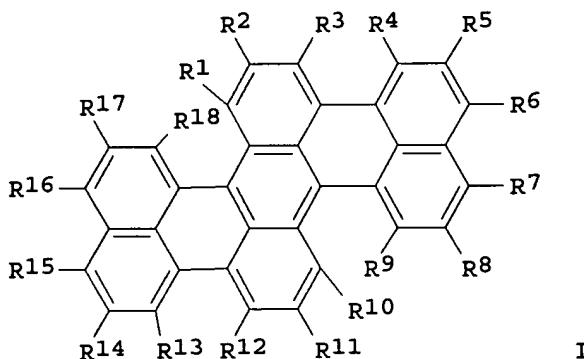
IT 249296-20-6  
RL: RCT (Reactant); RACT (Reactant or reagent)

(reaction with diphenylamine)

REFERENCE COUNT: 2 THERE ARE 2 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L48 ANSWER 13 OF 39 CAPLUS COPYRIGHT 2003 ACS  
 ACCESSION NUMBER: 2001:881986 CAPLUS  
 DOCUMENT NUMBER: 136:29034  
 TITLE: Diperinaphthyleneanthracene derivatives and organic electroluminescent devices using them  
 INVENTOR(S): Higashiguchi, Itaru; Ishikawa, Hitoshi; Tada, Hiroshi; Oda, Atsushi  
 PATENT ASSIGNEE(S): NEC Corp., Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 24 pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2001338760	A2	20011207	JP 2000-155332	20000525
US 2002022150	A1	20020221	US 2001-863465	20010524
PRIORITY APPLN. INFO.:			JP 2000-155332	A 20000525
OTHER SOURCE(S):		MARPAT 136:29034		
GI				



AB The invention relates to an electroluminescent device comprising a pair of electrodes sandwiching .gtoreq. 1 layer(s) contg. .gtoreq. 1 1,9:5,10-di(perinaphthylene)anthracene I [ R1-18 = the same or different groups selected from H, halo, OH, NH<sub>2</sub>, NO<sub>2</sub>, CN, CO<sub>2</sub>H, (un)substituted of alkyl, alkenyl, NH<sub>2</sub>, cycloalkyl, alkoxy, arom. hydrocarbyl, arom. heterocyclocyl, aralkyl, aryloxy, and alkoxycarbonyl, and fused rings formed with adjacent substituents, etc.].

IT 123847-85-8P 181367-28-2P 227939-49-3P

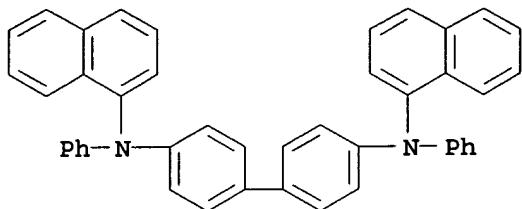
RL: DEV (Device component use); SPN (Synthetic preparation);

PREP (Preparation); USES (Uses)

(hole injection/transport layer; org. electroluminescent devices contg.)

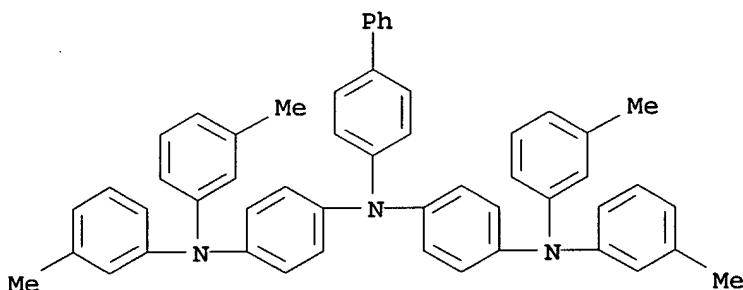
RN 123847-85-8 CAPLUS

CN [1,1'-Biphenyl]-4,4'-diamine, N,N'-di-1-naphthalenyl-N,N'-diphenyl- (9CI) (CA INDEX NAME)



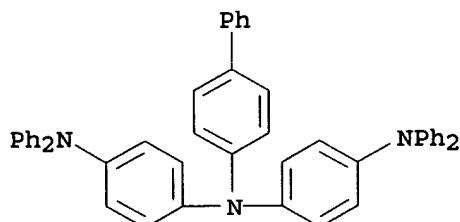
RN 181367-28-2 CAPLUS

CN 1,4-Benzenediamine, N-[1,1'-biphenyl]-4-yl-N-[4-[bis(3-methylphenyl)amino]phenyl]-N',N'-bis(3-methylphenyl)- (9CI) (CA INDEX NAME)



RN 227939-49-3 CAPLUS

CN 1,4-Benzenediamine, N-[1,1'-biphenyl]-4-yl-N-[4-(diphenylamino)phenyl]-N',N'-diphenyl- (9CI) (CA INDEX NAME)



IC ICM H05B033-14

ICS C09K011-06

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)  
Section cross-reference(s): 25  
ST diperinaphthylene anthracene deriv electroluminescence device  
IT Electroluminescent devices  
(novel diperinaphthyleneanthracene derivs. for)  
IT Fluorescent substances  
(novel diperinaphthyleneanthracene derivs. for org. electroluminescent devices)  
IT 65181-78-4P 123847-85-8P 181367-28-2P  
227939-49-3P  
RL: DEV (Device component use); SPN (Synthetic preparation);  
PREP (Preparation); USES (Uses)  
(hole injection/transport layer; org. electroluminescent devices contg.)  
IT 2085-33-8P, Alq3 138372-67-5P 194794-43-9P  
RL: DEV (Device component use); SPN (Synthetic preparation); PREP  
(Preparation); USES (Uses)  
(light-emitting layer; org. electroluminescent devices contg.)  
IT 378792-64-4P 378792-65-5P 378792-66-6P 378792-67-7P 378792-68-8P  
378792-70-2P 378792-71-3P 378792-75-7P 378792-76-8P 378792-82-6P  
378792-83-7P 378792-84-8P 378792-85-9P 378792-86-0P  
RL: DEV (Device component use); SPN (Synthetic preparation); PREP  
(Preparation); USES (Uses)  
(org. electroluminescent devices contg.)

L48 ANSWER 14 OF 39 CAPLUS COPYRIGHT 2003 ACS  
ACCESSION NUMBER: 2001:874388 CAPLUS  
DOCUMENT NUMBER: 136:12633  
TITLE: New triphenylamine derivative for electroluminescent device  
INVENTOR(S): Takahashi, Yoshiko; Inada, Hiroshi; Kameno, Isao;  
Shirota, Yasuhiko  
PATENT ASSIGNEE(S): Bando Chemical Industries, Ltd., Japan  
SOURCE: Jpn. Kokai Tokkyo Koho, 6 pp.  
CODEN: JKXXAF  
DOCUMENT TYPE: Patent  
LANGUAGE: Japanese  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2001335543	A2	20011204	JP 2000-164765	20000530
PRIORITY APPLN. INFO.:			JP 2000-164765	20000530

AB The invention relates to triphenylamine deriv. having a stable amorphous phase at RT and the glass transition temp. .gt;=req. 100 .degree.C, suited for use as a hole transport agent in an electroluminescent device, thus the new triphenylamine deriv. is 4,4',4''-tris[N,N-(9-phenanthryl)-m-tolylamino]triphenylamine.

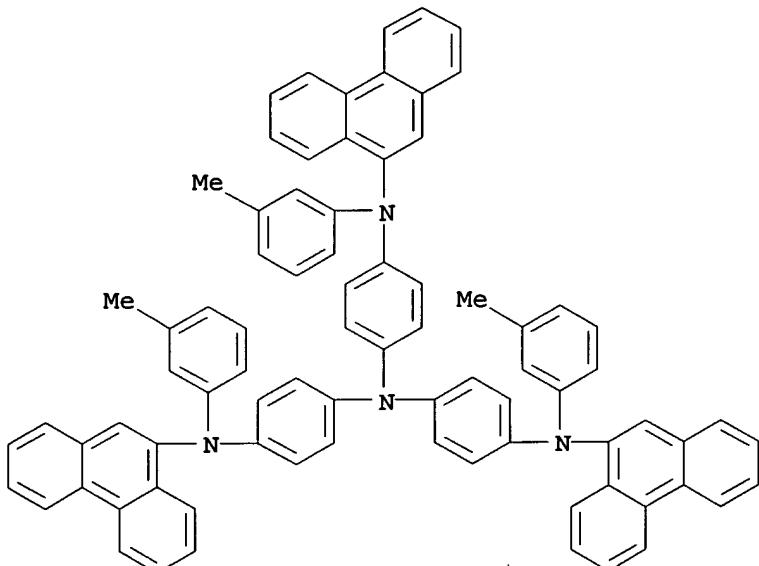
IT 376652-62-9P  
RL: DEV (Device component use); SPN (Synthetic preparation);

**PREP (Preparation); USES (Uses)**

(hole transport agent used in **electroluminescent device**)

RN 376652-62-9 CAPLUS

CN 1,4-Benzenediamine, N-(3-methylphenyl)-N'-(1-[(3-methylphenyl)-9-phenanthrenylamino]phenyl)-N'-(4-[(3-methylphenyl)-9-phenanthrenylamino]phenyl)-N-9-phenanthrenyl- (9CI) (CA INDEX NAME)



IC ICM C07C211-61

ICS C09K011-06; C23C014-12; H05B033-14; H05B033-22

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

ST triphenylamine phenanthrene tolylamine electroluminescent device

IT Electroluminescent devices

(triphenylamine deriv. for electroluminescent device)

IT 376652-62-9P

RL: DEV (Device component use); SPN (Synthetic preparation);

**PREP (Preparation); USES (Uses)**

(hole transport agent used in **electroluminescent device**)

IT 4181-20-8, 4,4',4'''-Triiodotriphenylamine 376652-63-0

RL: RCT (Reactant); RACT (Reactant or reagent)

(in prodn. of hole transport agent used in electroluminescent device)

IT 1310-58-3, Potassium hydroxide, reactions 7440-50-8, Copper, reactions

RL: RGT (Reagent); RACT (Reactant or reagent)

(in prodn. of hole transport agent used in electroluminescent device)

L48 ANSWER 15 OF 39 CAPLUS COPYRIGHT 2003 ACS

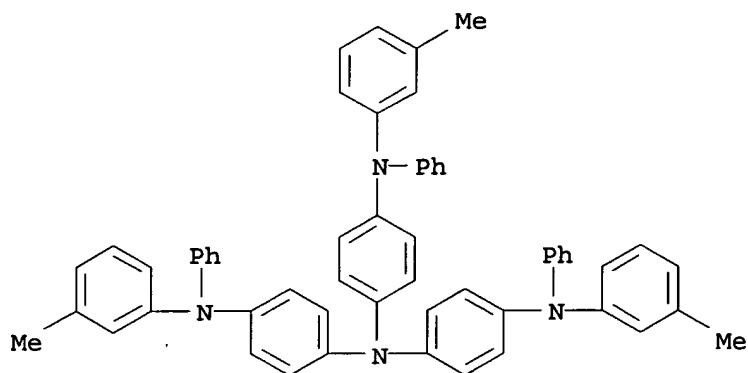
ACCESSION NUMBER: 2001:626018 CAPLUS

DOCUMENT NUMBER: 135:187696

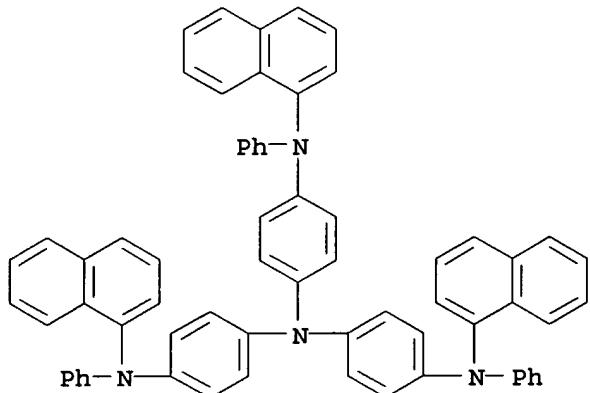
TITLE: Electroluminescent device containing new electron transport substance for improving luminescent properties, heat-resistance, and durability

INVENTOR(S) : Shirota, Yasuhiko  
PATENT ASSIGNEE(S) : Japan  
SOURCE: Jpn. Kokai Tokkyo Koho, 7 pp.  
CODEN: JKXXAF  
DOCUMENT TYPE: Patent  
LANGUAGE: Japanese  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

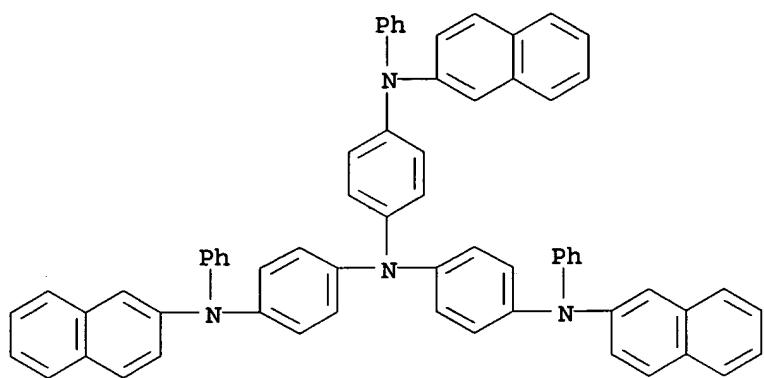
PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2001233882	A2	20010828	JP 2000-51210	20000228
PRIORITY APPLN. INFO.:			JP 2000-51210	20000228
AB The invention relates to an electroluminescent display device which contains 1,3,5-tris[5-(dimethylboryl)-2-thienyl]benzene in an electron transport layer. The electroluminescent display device contains tris(p-terphenyl-4-yl)amine in a luminescent layer. The electroluminescent display device contains an org. compd. selected from 4,4',4'''-tris(3-methylphenylphenylamino)triphenylamine, 4,4',4'''-tris(1-naphthylphenylamino)triphenylamine, 4,4',4'''-tris(2-naphthylphenylamino)triphenylamine, 4,4',4'''-tris[biphenyl-2-yl(phenyl)amino]triphenylamine, 4,4',4'''-tris[biphenyl-3-yl(phenyl)amino]triphenylamine, 4,4',4'''-tris[biphenyl-4-yl(3-methylphenyl)amino]triphenylamine, and 4,4',4'''-tris[9,9-dimethyl-2-fluorenyl(phenyl)amino]triphenylamine in a pos. hole injection layer. The electroluminescent device is suitable for blue- and full color-flat panel displays.				
IT 124729-98-2P, 4,4',4'''-Tris(3-methylphenylphenylamino)triphenylamine				
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PNU (Preparation, unclassified); PREP (Preparation); PROC (Process); USES (Uses) (in pos. hole injection layer; electroluminescent device contg. new electron transport substance for improving luminescent properties, heat-resistance, and durability)				
RN 124729-98-2 CAPLUS				
CN 1,4-Benzenediamine, N-(3-methylphenyl)-N',N'-bis[4-[(3-methylphenyl)phenylamino]phenyl]-N-phenyl- (9CI) (CA INDEX NAME)				



IT 185690-39-5P 185690-41-9P, 4,4',4''-Tris(2-naphthylphenylamino)triphenylamine 214545-00-3P  
281678-62-4P 281678-63-5P 303111-06-0P  
RL: PNU (Preparation, unclassified); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)  
(prepn. of compd. useful for pos. hole injection layer of electroluminescent device)  
RN 185690-39-5 CAPLUS  
CN 1,4-Benzenediamine, N-1-naphthalenyl-N',N'-bis[4-(1-naphthalenylphenylamino)phenyl]-N-phenyl- (9CI) (CA INDEX NAME)

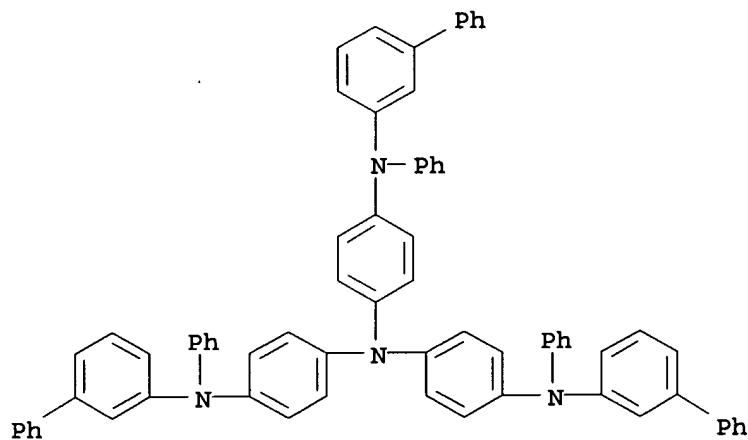


RN 185690-41-9 CAPLUS  
CN 1,4-Benzenediamine, N-2-naphthalenyl-N',N'-bis[4-(2-naphthalenylphenylamino)phenyl]-N-phenyl- (9CI) (CA INDEX NAME)



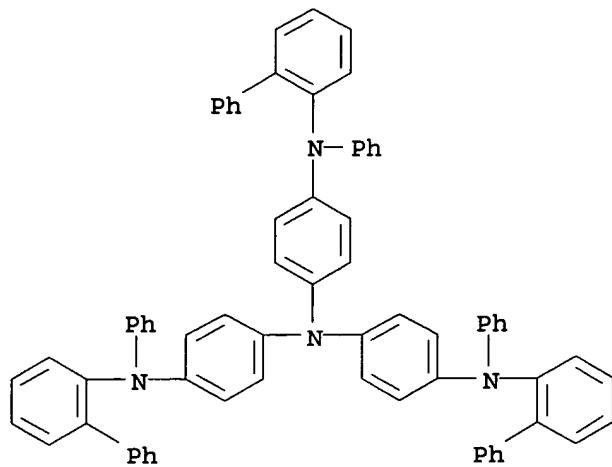
RN 214545-00-3 CAPLUS

CN 1,4-Benzenediamine, N-[1,1'-biphenyl]-3-yl-N',N'-bis[4-((1,1'-biphenyl)-3-ylphenylamino)phenyl]-N-phenyl- (9CI) (CA INDEX NAME)



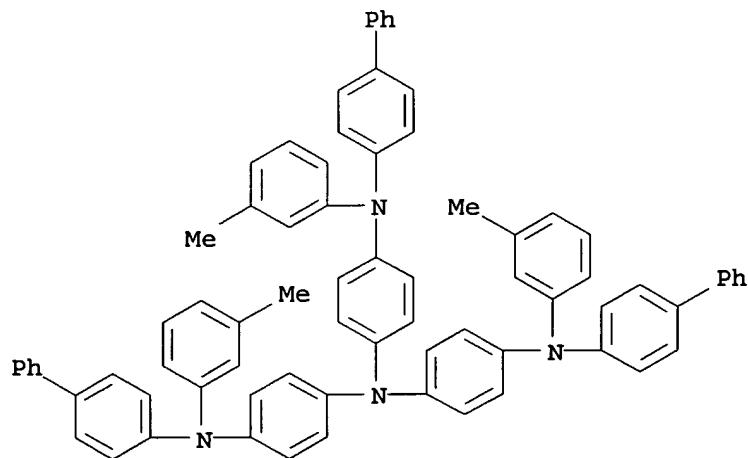
RN 281678-62-4 CAPLUS

CN 1,4-Benzenediamine, N-[1,1'-biphenyl]-2-yl-N',N'-bis[4-((1,1'-biphenyl)-2-ylphenylamino)phenyl]-N-phenyl- (9CI) (CA INDEX NAME)



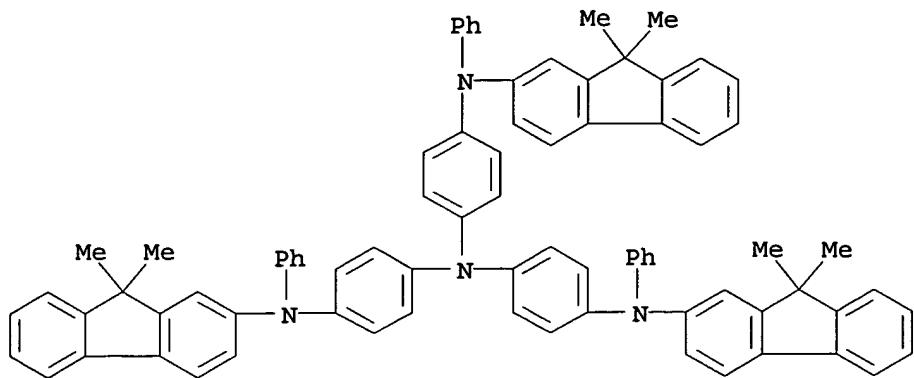
RN 281678-63-5 CAPLUS

CN 1,4-Benzenediamine, N-[1,1'-biphenyl]-4-yl-N',N'-bis[4-[[1,1'-biphenyl]-4-yl(3-methylphenyl)amino]phenyl]-N-(3-methylphenyl)- (9CI) (CA INDEX NAME)



RN 303111-06-0 CAPLUS

CN 1,4-Benzenediamine, N-(9,9-dimethyl-9H-fluoren-2-yl)-N,N'-bis[4-[(9,9-dimethyl-9H-fluoren-2-yl)phenylamino]phenyl]-N-phenyl- (9CI) (CA INDEX NAME)



IC ICM C07F005-02  
ICS C07C211-54; C07D221-18; C09K011-06; H05B033-14; H05B033-22  
CC 74-3 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)  
Section cross-reference(s): 73  
ST electroluminescent display electron transport substance pos hole injection layer  
IT Electroluminescent devices  
(electroluminescent device contg. new electron transport substance for improving luminescent properties, heat-resistance, and durability)  
IT 355832-02-9P  
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PNU (Preparation, unclassified); PREP (Preparation); PROC (Process); USES (Uses)  
(electron transport substance in electroluminescent device with improved luminescent properties, heat-resistance, and durability)  
IT 145693-79-4P  
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PNU (Preparation, unclassified); PREP (Preparation); PROC (Process); USES (Uses)  
(in luminescent layer; electroluminescent device contg. new electron transport substance for improving luminescent properties, heat-resistance, and durability)  
IT 124729-98-2P, 4,4',4''-Tris(3-methylphenylphenylamino)triphenylamine  
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PNU (Preparation, unclassified); PREP (Preparation); PROC (Process); USES (Uses)  
(in pos. hole injection layer; electroluminescent device contg. new electron transport substance for improving luminescent properties, heat-resistance, and durability)  
IT 92-66-0, 4-Bromobiphenyl  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(prep. of compd. useful for luminescent layer of electroluminescent device)  
IT 185690-39-5P 185690-41-9P, 4,4',4''-Tris(2-naphthylphenylamino)triphenylamine 214545-00-3P

281678-62-4P 281678-63-5P 303111-06-0P

RL: PNU (Preparation, unclassified); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)  
 (prepn. of compd. useful for pos. hole injection layer of electroluminescent device)

IT 90-30-2, N-Phenyl-1-naphthylamine 135-88-6, N-Phenyl-2-naphthylamine  
 1205-64-7, N-(3-Methylphenyl)aniline 4181-20-8, Tris(4-iodophenyl)amine  
 35887-50-4 198275-79-5 355832-03-0 355832-04-1  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (prepn. of compd. useful for pos. hole injection layer of electroluminescent device)

IT 436-59-9, Dimesitylboronfluoride 15509-95-2, 1,3,5-Tris(2-thienyl)benzene  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (prepn. of electron transport substance for electroluminescent device)

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ACCESSION NUMBER: 2001:603530 CAPLUS

DOCUMENT NUMBER: 135:187795

TITLE: New amine compound for organic electroluminescent device showing longer luminescent lifetime and excellent durability

INVENTOR(S): Shimamura, Takehiko; Nakatsuka, Masakatsu; Ishida, Tsutomu

PATENT ASSIGNEE(S): Mitsui Chemicals Inc., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 75 pp.

CODEN: JKXXAF

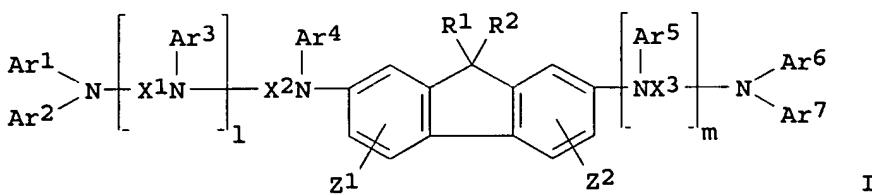
DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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JP 2001226331	A2	20010821	JP 2000-34477	20000214
PRIORITY APPLN. INFO.:			JP 2000-34477	20000214
OTHER SOURCE(S):	MARPAT	135:187795		
GI				



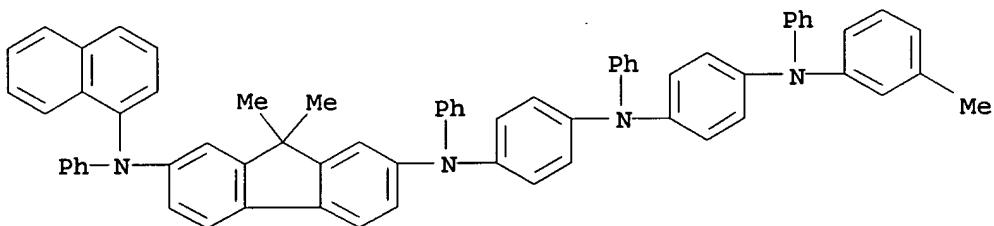
AB The new amine compd. is represented by a general formula I (Ar1-7 = aryl; R1, R2 = H, alkyl, aryl, aralkyl; Z1, Z2 = H, halo, alkyl, alkoxy, aryl; X1-3 = arylene; l, m = 0, 1) and synthesized. The amine compd. is

suitable as a pos. hole injection transport material in an org. electroluminescent display device.

IT 354987-33-0 354987-34-1 354987-35-2  
 354987-38-5 354987-40-9 354987-41-0  
 354987-44-3 354987-45-4 354987-48-7  
 354987-49-8 354987-51-2 354987-53-4  
 354987-54-5 354987-56-7 354987-57-8  
 354987-59-0 354987-61-4 354987-63-6  
 354987-64-7 354987-65-8  
 RL: DEV (Device component use); PRP (Properties); USES (Uses)  
 (amine compd. for org. **electroluminescent** device showing  
 longer luminescent lifetime and excellent durability)

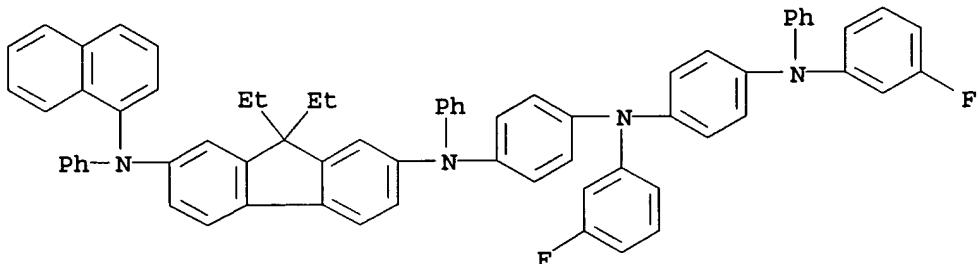
RN 354987-33-0 CAPLUS

CN 9H-Fluorene-2,7-diamine, 9,9-dimethyl-N-[4-[[4-[(3-methylphenyl)phenylamino]phenyl]phenylamino]phenyl]-N'-1-naphthalenyl-N,N'-diphenyl- (9CI) (CA INDEX NAME)



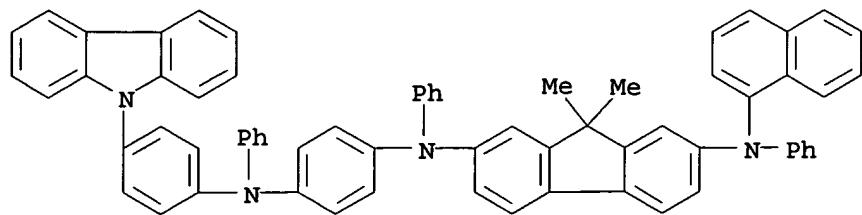
RN 354987-34-1 CAPLUS

CN 9H-Fluorene-2,7-diamine, 9,9-diethyl-N-[4-[(3-fluorophenyl)[4-[(3-fluorophenyl)phenylamino]phenyl]amino]phenyl]-N'-1-naphthalenyl-N,N'-diphenyl- (9CI) (CA INDEX NAME)



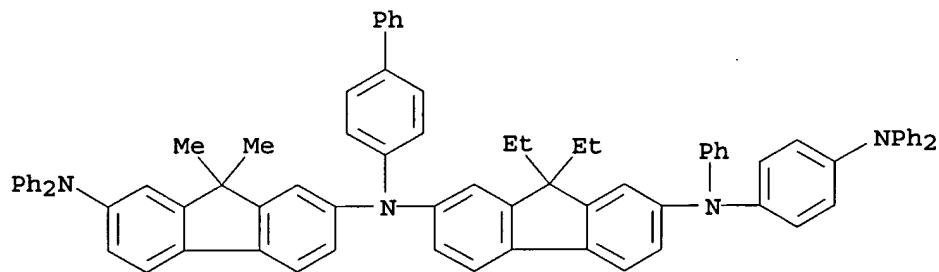
RN 354987-35-2 CAPLUS

CN 9H-Fluorene-2,7-diamine, N-[4-[[4-(9H-carbazol-9-yl)phenyl]phenylamino]phenyl]-9,9-dimethyl-N'-1-naphthalenyl-N,N'-diphenyl- (9CI) (CA INDEX NAME)



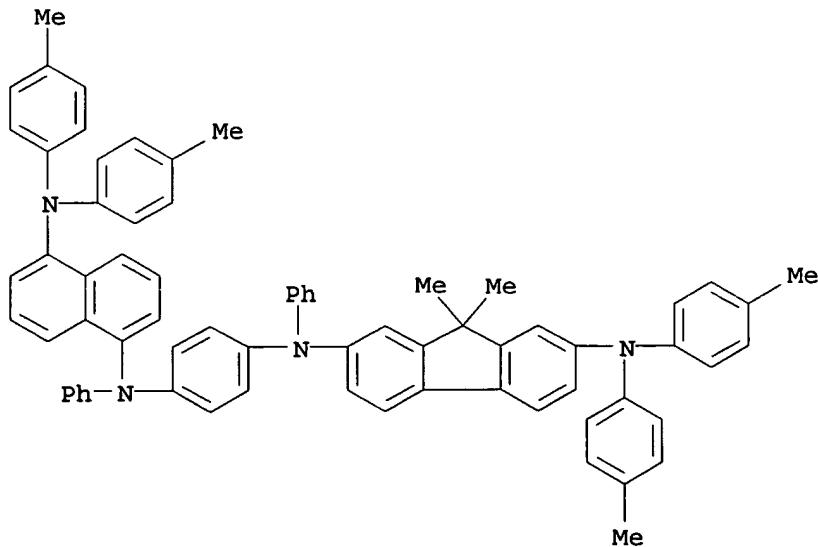
RN 354987-38-5 CAPLUS

CN 9H-Fluorene-2,7-diamine, N-[1,1'-biphenyl]-4-yl-N-[7-(diphenylamino)-9,9-dimethyl-9H-fluoren-2-yl]-N'-(4-(diphenylamino)phenyl)-9,9-diethyl-N'-phenyl- (9CI) (CA INDEX NAME)



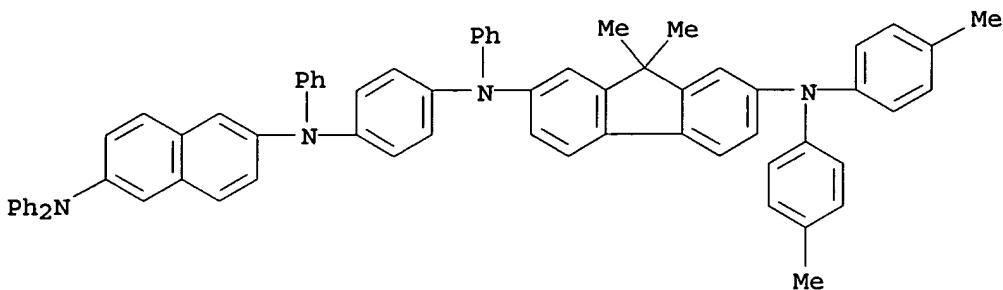
RN 354987-40-9 CAPLUS

CN 9H-Fluorene-2,7-diamine, N-[4-[(5-[bis(4-methylphenyl)amino]-1-naphthalenyl)phenylamino]phenyl]-9,9-dimethyl-N',N'-bis(4-methylphenyl)-N-phenyl- (9CI) (CA INDEX NAME)



RN 354987-41-0 CAPLUS

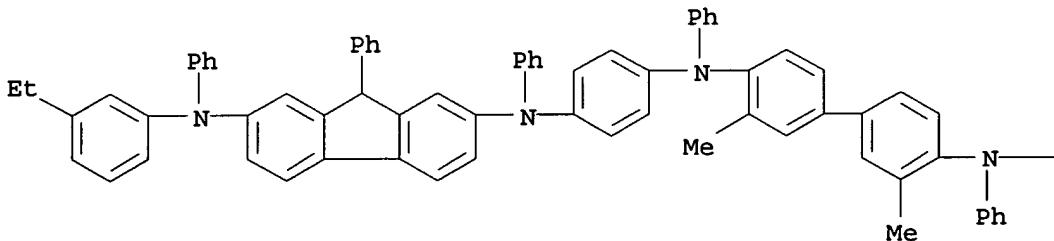
CN 9H-Fluorene-2,7-diamine, N-[4-[[6-(diphenylamino)-2-naphthalenyl]phenylamino]phenyl]-9,9-dimethyl-N',N'-bis(4-methylphenyl)-N-phenyl- (9CI) (CA INDEX NAME)



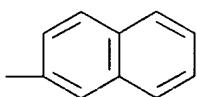
RN 354987-44-3 CAPLUS

CN 9H-Fluorene-2,7-diamine, N-[4-[[3,3'-dimethyl-4'-(2-naphthalenylphenylamino)[1,1'-biphenyl]-4-yl]phenylamino]phenyl]-N'-(3-ethylphenyl)-N,N',9-triphenyl- (9CI) (CA INDEX NAME)

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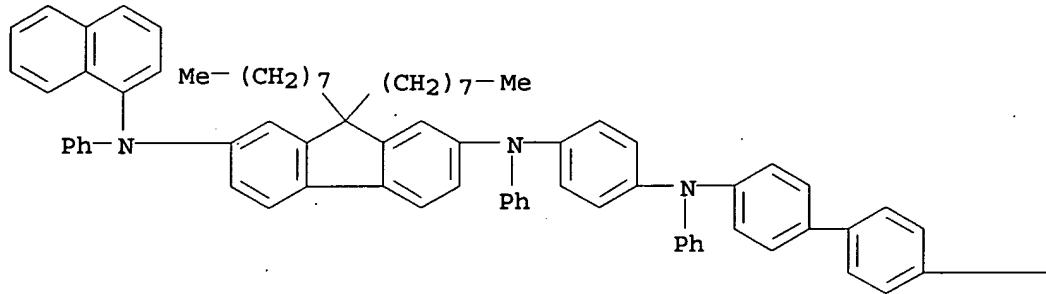
PAGE 1-B



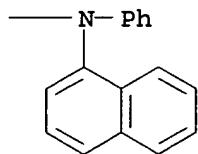
RN 354987-45-4 CAPLUS

CN 9H-Fluorene-2,7-diamine, N-1-naphthalenyl-N'-[4-[[4'-(1-naphthalenylphenylamino)[1,1'-biphenyl]-4-yl]phenylamino]phenyl]-9,9-dioctyl-N,N'-diphenyl- (9CI) (CA INDEX NAME)

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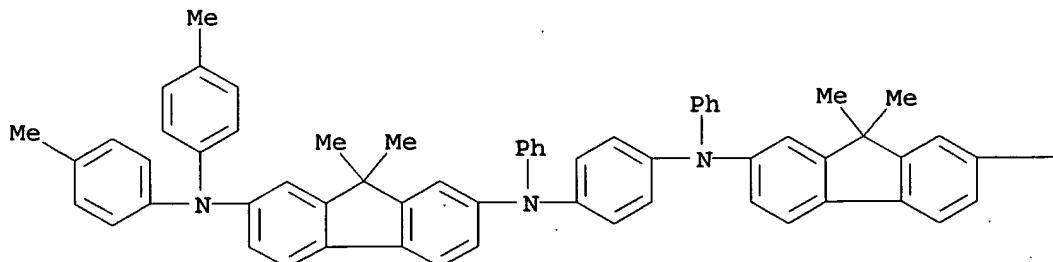
PAGE 1-B



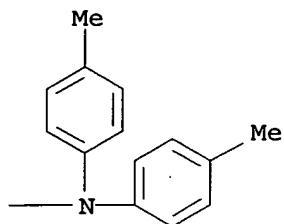
RN 354987-48-7 CAPLUS

CN 9H-Fluorene-2,7-diamine, N,N'-1,4-phenylenebis[9,9-dimethyl-N',N'-bis(4-methylphenyl)-N-phenyl- (9CI) (CA INDEX NAME)

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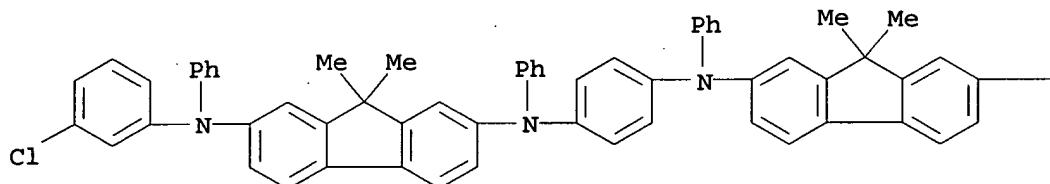
PAGE 1-B



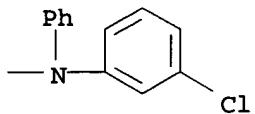
RN 354987-49-8 CAPLUS

CN 9H-Fluorene-2,7-diamine, N,N'-1,4-phenylenebis[N'-(3-chlorophenyl)-9,9-dimethyl-N,N'-diphenyl- (9CI) (CA INDEX NAME)

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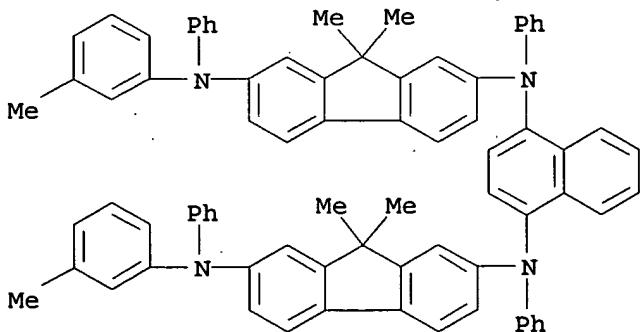


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RN 354987-51-2 CAPLUS

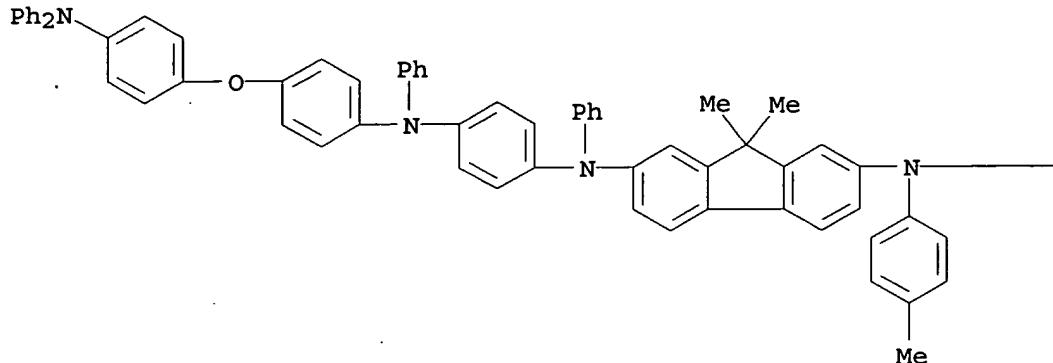
CN 9H-Fluorene-2,7-diamine, N,N'-1,4-naphthalenediylibis[9,9-dimethyl-N'-(3-methylphenyl)-N,N'-diphenyl- (9CI) (CA INDEX NAME)



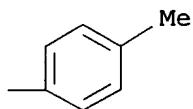
RN 354987-53-4 CAPLUS

CN 9H-Fluorene-2,7-diamine, N-[4-[[4-(diphenylamino)phenoxy]phenyl]phenylaminophenyl]-9,9-dimethyl-N',N'-bis(4-methylphenyl)-N-phenyl- (9CI) (CA INDEX NAME)

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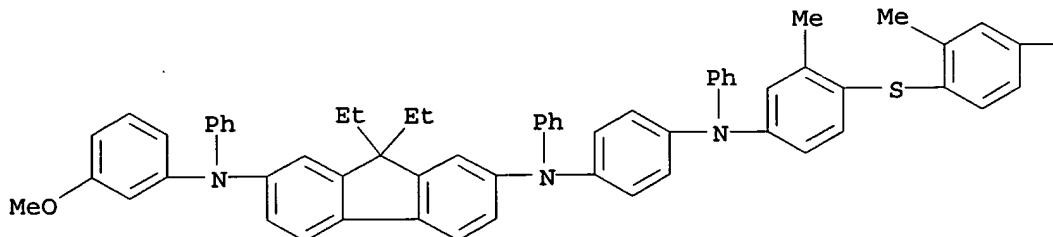
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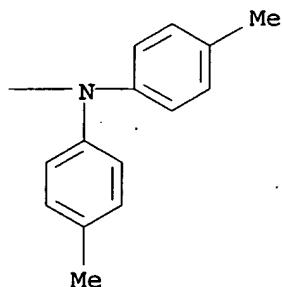
RN 354987-54-5 CAPLUS

CN 9H-Fluorene-2,7-diamine, N-[4-[[4-[bis(4-methylphenyl)amino]-2-methylphenyl]thio]-3-methylphenyl]phenylamino]phenyl]-9,9-diethyl-N'-(3-methoxyphenyl)-N,N'-diphenyl- (9CI) (CA INDEX NAME)

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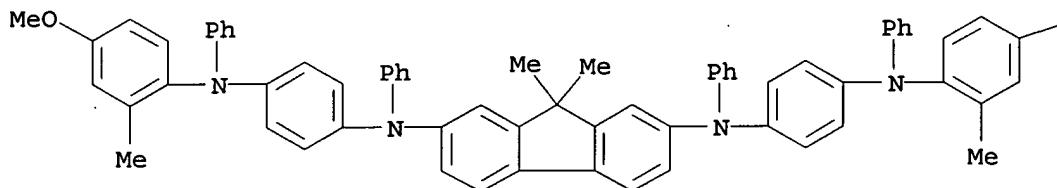
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RN 354987-56-7 CAPLUS

CN 9H-Fluorene-2,7-diamine, N,N'-bis[4-[(4-methoxy-2-methylphenyl)phenylamino]phenyl]-9,9-dimethyl-N,N'-diphenyl- (9CI) (CA INDEX NAME)

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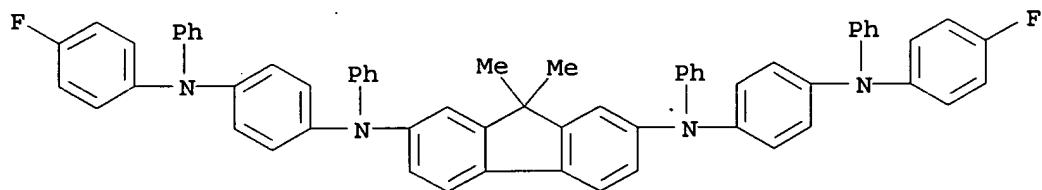


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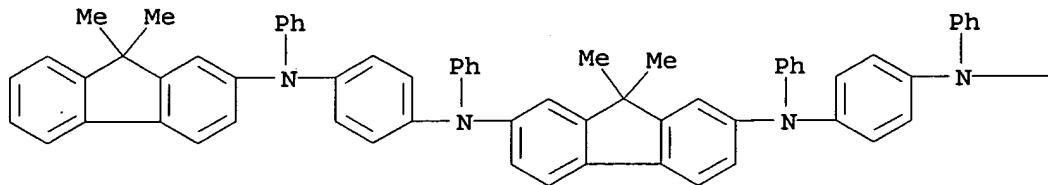
CN 9H-Fluorene-2,7-diamine, N,N'-bis[4-[(4-fluorophenyl)phenylamino]phenyl]-9,9-dimethyl-N,N'-diphenyl- (9CI) (CA INDEX NAME)



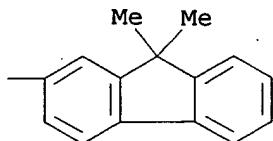
RN 354987-59-0 CAPLUS

CN 9H-Fluorene-2,7-diamine, N,N'-bis[4-[(9,9-dimethyl-9H-fluoren-2-yl)phenylamino]phenyl]-9,9-dimethyl-N,N'-diphenyl- (9CI) (CA INDEX NAME)

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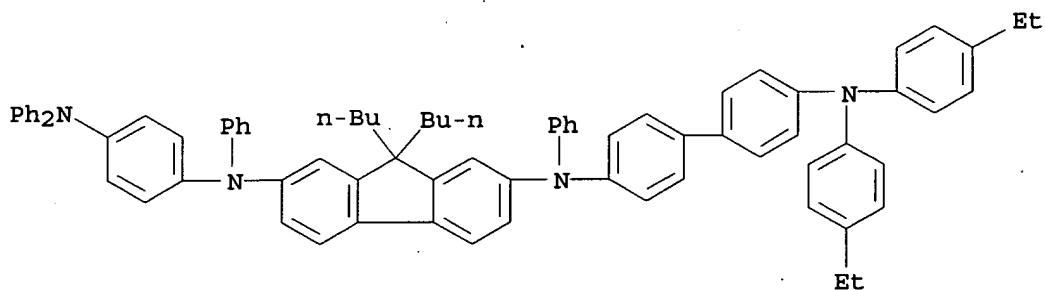


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RN 354987-61-4 CAPLUS

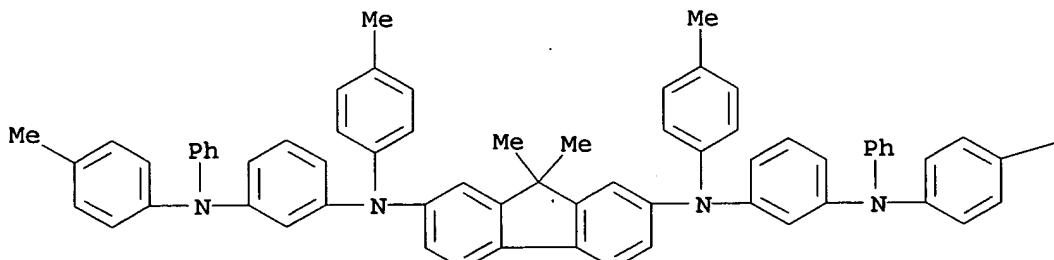
CN 9H-Fluorene-2,7-diamine, N-[4'-[bis(4-ethylphenyl)amino][1,1'-biphenyl]-4-yl]-9,9-dibutyl-N'-(4-(diphenylamino)phenyl)-N,N'-diphenyl- (9CI) (CA INDEX NAME)



RN 354987-63-6 CAPLUS

CN 9H-Fluorene-2,7-diamine, 9,9-dimethyl-N,N'-bis(4-methylphenyl)-N,N'-bis[3-[(4-methylphenyl)phenylamino]phenyl]- (9CI) (CA INDEX NAME)

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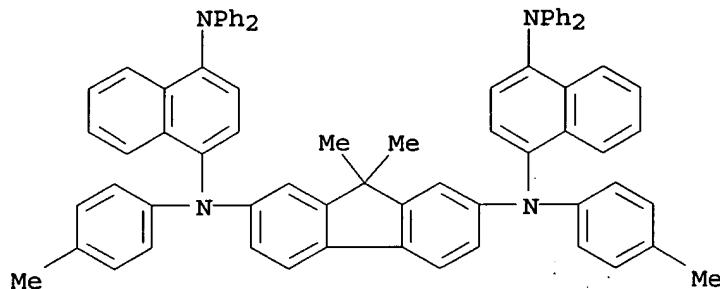


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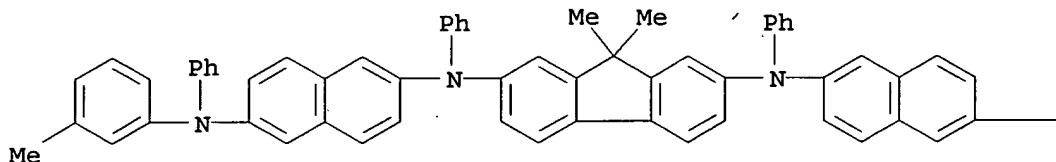
CN 9H-Fluorene-2,7-diamine, N,N'-bis[4-(diphenylamino)-1-naphthalenyl]-9,9-dimethyl-N,N'-bis(4-methylphenyl)- (9CI) (CA INDEX NAME)



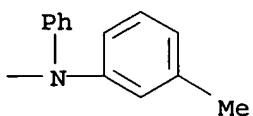
RN 354987-65-8 CAPLUS

CN 9H-Fluorene-2,7-diamine, 9,9-dimethyl-N,N'-bis[6-[(3-methylphenyl)phenylamino]-2-naphthalenyl]-N,N'-diphenyl- (9CI) (CA INDEX NAME)

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IT 354987-31-8P 354987-32-9P 354987-36-3P

354987-39-6P 354987-42-1P 354987-43-2P

354987-47-6P 354987-50-1P 354987-55-6P

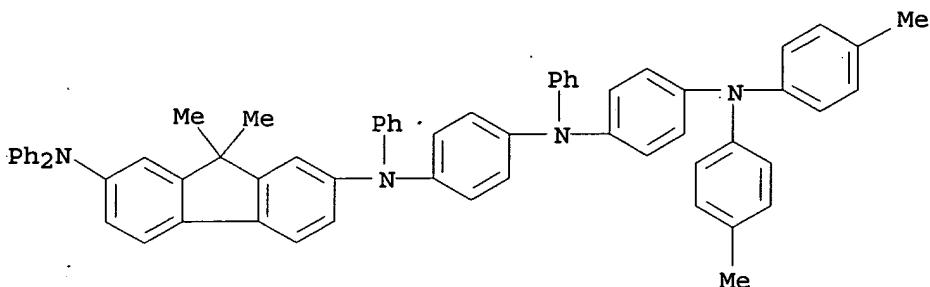
354987-58-9P 354987-62-5P 354987-71-6P

RL: DEV (Device component use); PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)

(amine compd. for org. electroluminescent device showing longer luminescent lifetime and excellent durability)

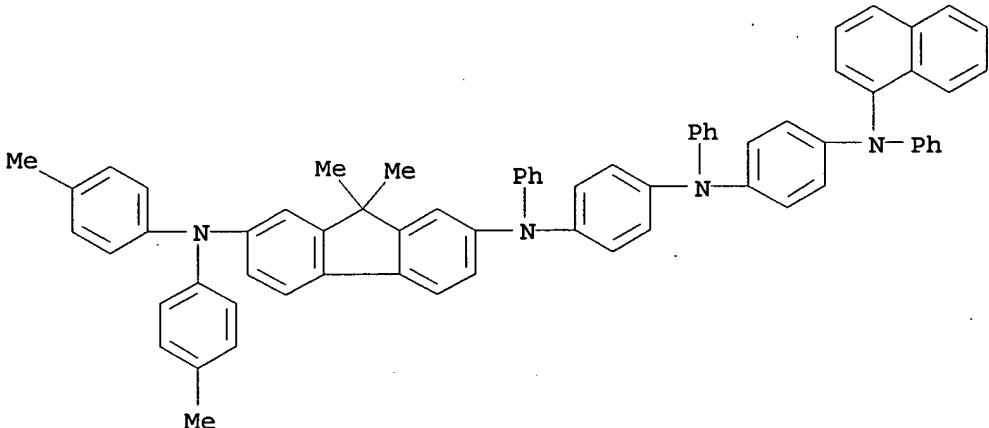
RN 354987-31-8 CAPLUS

CN 9H-Fluorene-2,7-diamine, N-[4-[[4-[bis(4-methylphenyl)amino]phenyl]phenyl]amino]phenyl-9,9-dimethyl-N,N',N'-triphenyl- (9CI) (CA INDEX NAME)



RN 354987-32-9 CAPLUS

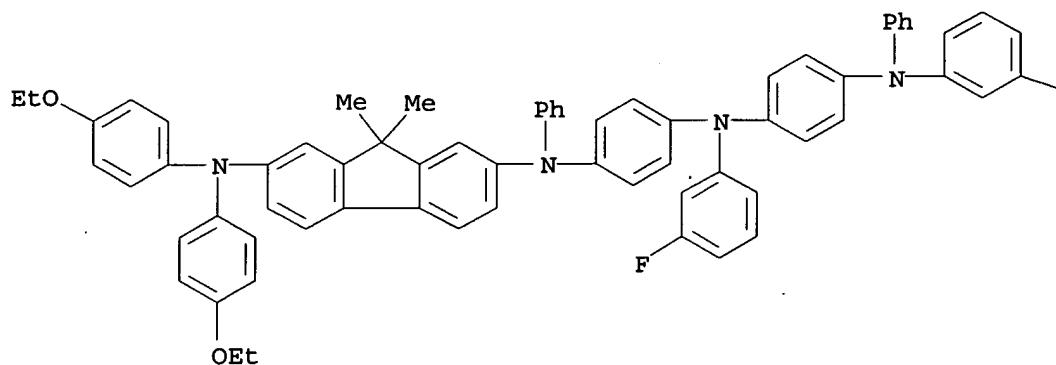
CN 9H-Fluorene-2,7-diamine, 9,9-dimethyl-N,N-bis(4-methylphenyl)-N'-(4-[(1-naphthalenylphenylamino)phenyl]phenylamino)phenyl]-N'-phenyl- (9CI) (CA INDEX NAME)



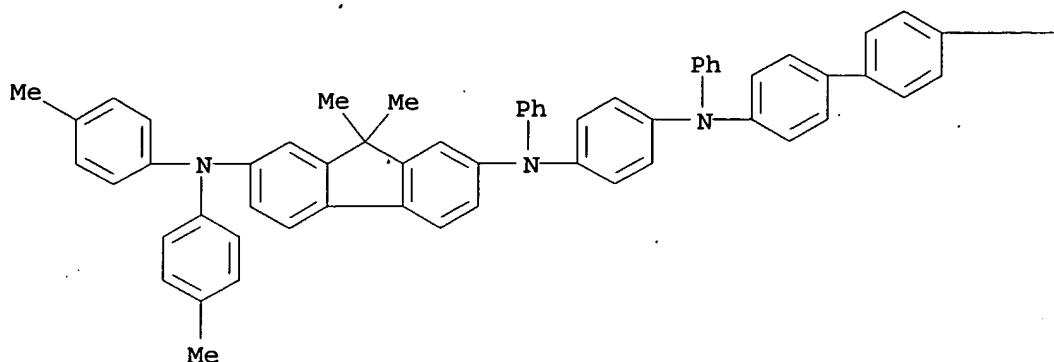
RN 354987-36-3 CAPLUS

CN 9H-Fluorene-2,7-diamine, N,N-bis(4-ethoxyphenyl)-N'-(4-[(3-fluorophenyl)[4-[(3-fluorophenyl)phenylamino]phenyl]amino]phenyl)-9,9-dimethyl-N'-phenyl- (9CI) (CA INDEX NAME)

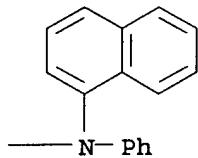
PAGE 1-A



PAGE 1-A



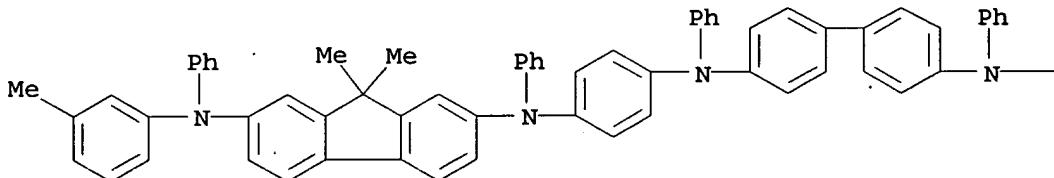
PAGE 1-B



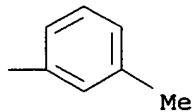
RN 354987-43-2 CAPLUS

CN 9H-Fluorene-2,7-diamine, 9,9-dimethyl-N-(3-methylphenyl)-N'-(4-[(4-[(3-methylphenyl)phenylamino]biphenyl)-4-yl]phenylamino)biphenyl-N,N'-diphenyl- (9CI) (CA INDEX NAME)

PAGE 1-A



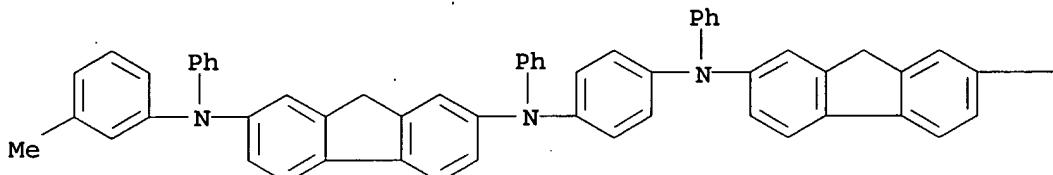
PAGE 1-B



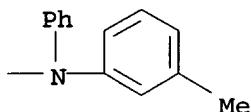
RN 354987-47-6 CAPLUS

CN 9H-Fluorene-2,7-diamine, N,N'-1,4-phenylenebis[N'-(3-methylphenyl)-N,N'-diphenyl- (9CI) (CA INDEX NAME)

PAGE 1-A



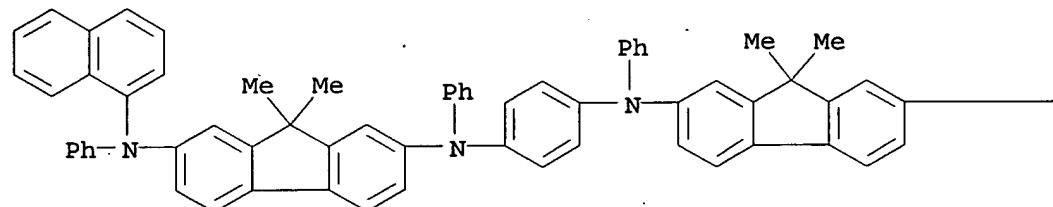
PAGE 1-B



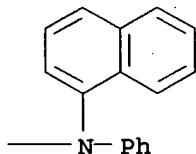
RN 354987-50-1 CAPLUS

CN 9H-Fluorene-2,7-diamine, N,N'-1,4-phenylenebis[9,9-dimethyl-N'-1-naphthalenyl-N,N'-diphenyl- (9CI) (CA INDEX NAME)

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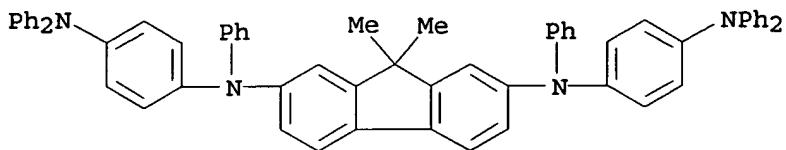
PAGE 1-B



RN 354987-55-6 CAPLUS

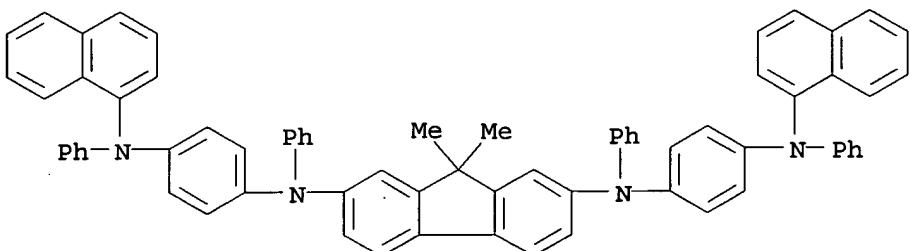
CN 9H-Fluorene-2,7-diamine, N,N'-bis[4-(diphenylamino)phenyl]-9,9-dimethyl-

N,N'-diphenyl- (9CI) (CA INDEX NAME)



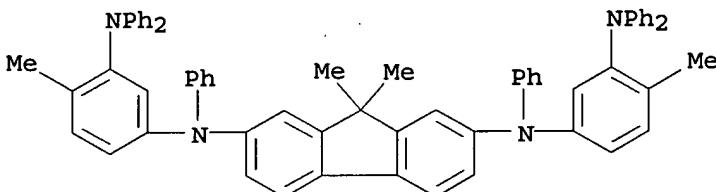
RN 354987-58-9 CAPLUS

CN 9H-Fluorene-2,7-diamine, 9,9-dimethyl-N,N'-bis[4-(1-naphthalenylphenylamino)phenyl]-N,N'-diphenyl- (9CI) (CA INDEX NAME)



RN 354987-62-5 CAPLUS

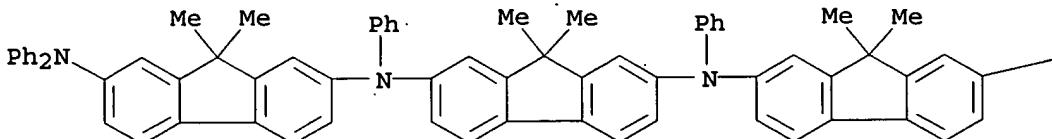
CN 9H-Fluorene-2,7-diamine, N,N'-bis[3-(diphenylamino)-4-methylphenyl]-9,9-dimethyl-N,N'-diphenyl- (9CI) (CA INDEX NAME)



RN 354987-71-6 CAPLUS

CN 9H-Fluorene-2,7-diamine, N,N'-bis[7-(diphenylamino)-9,9-dimethyl-9H-fluoren-2-yl]-9,9-dimethyl-N,N'-diphenyl- (9CI) (CA INDEX NAME)

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-NPh<sub>2</sub>

IT 354987-76-1

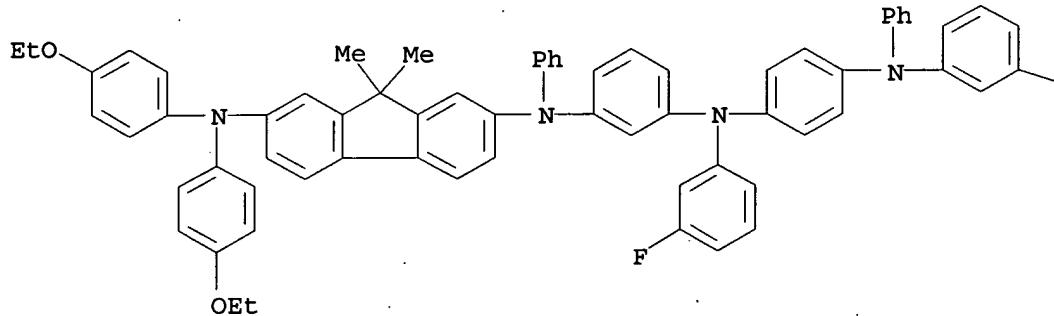
RL: RCT (Reactant); RACT (Reactant or reagent)

(synthesis of amine compd. for org. electroluminescent device showing longer luminescent lifetime and excellent durability)

RN 354987-76-1 CAPLUS

CN 9H-Fluorene-2,7-diamine, N,N-bis(4-ethoxyphenyl)-N'-(3-[(3-fluorophenyl)[4-[(3-fluorophenyl)phenylamino]phenyl]amino]phenyl)-9,9-dimethyl-N'-phenyl- (9CI) (CA INDEX NAME)

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-F

IC ICM C07C211-61

ICS C07C217-94; C07D209-86; C07D213-74; C07D265-38; C07D279-26;  
C07D333-36; C09K011-06; H05B033-14; H05B033-22

CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)

Section cross-reference(s): 73

ST amine compd synthesis pos hole injection transport material;  
electroluminescent display device amine compd charge transport material

IT Electroluminescent devices

(amine compd. for org. electroluminescent device showing longer luminescent lifetime and excellent durability)

IT 354987-33-0 354987-34-1 354987-35-2  
354987-37-4 354987-38-5 354987-40-9  
354987-41-0 354987-44-3 354987-45-4

354987-48-7 354987-49-8 354987-51-2  
354987-53-4 354987-54-5 354987-56-7  
354987-57-8 354987-59-0 354987-60-3  
354987-61-4 354987-63-6 354987-64-7  
354987-65-8 354987-66-9 354987-69-2 354987-70-5  
354987-72-7 354987-73-8

RL: DEV (Device component use); PRP (Properties); USES (Uses)  
(amine compd. for org. electroluminescent device showing  
longer luminescent lifetime and excellent durability)

IT 354987-31-8P 354987-32-9P 354987-36-3P  
354987-39-6P 354987-42-1P 354987-43-2P  
354987-46-5P 354987-47-6P 354987-50-1P 354987-52-3P  
354987-55-6P 354987-58-9P 354987-62-5P  
354987-67-0P 354987-71-6P

RL: DEV (Device component use); PRP (Properties); SPN (Synthetic  
preparation); PREP (Preparation); USES (Uses)  
(amine compd. for org. electroluminescent device showing  
longer luminescent lifetime and excellent durability)

IT 74-31-7 106-37-6, 1,4-Dibromobenzene 3001-15-8, 4,4'-Diiodobiphenyl  
19606-98-5 138417-49-9 144981-86-2, 2,7-Diido-9,9-dimethyl-9H-  
fluorene 195443-34-6 280113-41-9 302579-18-6 308144-59-4  
308144-63-0, 2-(N,N-Diphenylamino)-9,9-dimethyl-7-iodo-9H-fluorene  
329180-34-9 354987-74-9 354987-75-0 354987-76-1  
354987-77-2 354987-78-3 354987-79-4 354987-80-7 354987-81-8  
354987-82-9 354987-83-0 354987-84-1 354987-85-2 354987-86-3  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(synthesis of amine compd. for org. electroluminescent device  
showing longer luminescent lifetime and excellent durability)

L48 ANSWER 17 OF 39 CAPLUS COPYRIGHT 2003 ACS

ACCESSION NUMBER: 2001:463212 CAPLUS  
DOCUMENT NUMBER: 135:68360  
TITLE: Electroluminescent devices and organic compounds for  
hole transporters  
INVENTOR(S): Shirota, Yasuhiko  
PATENT ASSIGNEE(S): Osaka University, Japan  
SOURCE: Jpn. Kokai Tokkyo Koho, 6 pp.  
CODEN: JKXXAF  
DOCUMENT TYPE: Patent  
LANGUAGE: Japanese  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2001172232	A2	20010626	JP 1999-362784	19991221
PRIORITY APPLN. INFO.:			JP 1999-362784	19991221

AB The device comprises a substrate, a transparent electrode, a  
hole-transport layer contg. 4,4',4"-tris[biphenyl-2-  
yl(phenyl)amino]triphenylamine and/or 4,4',4"-tris[biphenyl-4-yl(3-  
methylphenyl)amino]triphenylamine, a light-emitting layer, and a backing  
electrode laminated in the order. The device may also contain a 2nd

hole-transport layer contg. N,N'-di(biphenyl-4-yl)-N,N'-diphenyl-(1,1'-biphenyl)-4,4'-diamine. The light-emitting layer may comprise tris(8-quinolinolato)aluminum. The compds. specified above and their use as hole transporters are also claimed. The devices are esp. suitable for use in full color flat panel displays.

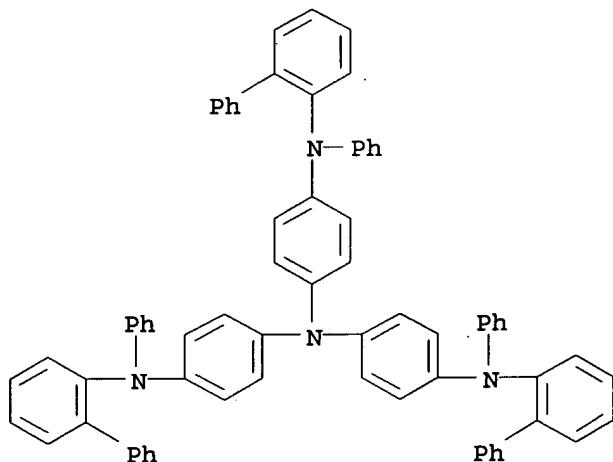
IT 281678-62-4P 281678-63-5P

RL: DEV (Device component use); IMF (Industrial manufacture);  
TEM (Technical or engineered material use); PREP (Preparation);  
USES (Uses)

(tris[biphenyl(phenyl)amino]triphenylamines as hole transporters in  
electroluminescent devices for high luminance)

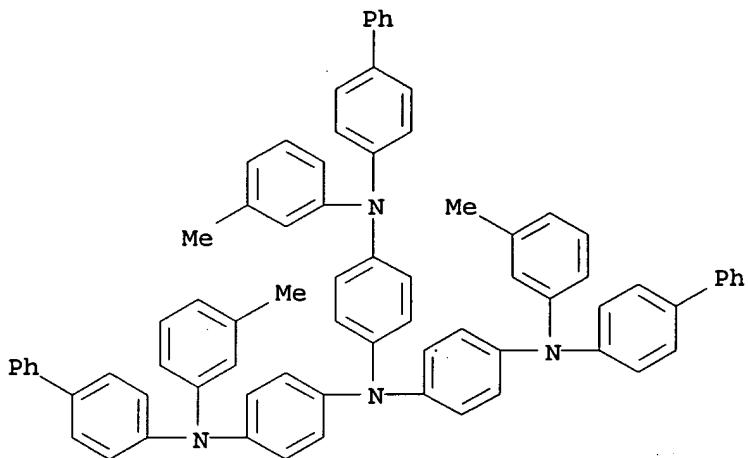
RN 281678-62-4 CAPLUS

CN 1,4-Benzenediamine, N-[1,1'-biphenyl]-2-yl-N',N'-bis[4-([1,1'-biphenyl]-2-ylphenylamino)phenyl]-N-phenyl- (9CI) (CA INDEX NAME)



RN 281678-63-5 CAPLUS

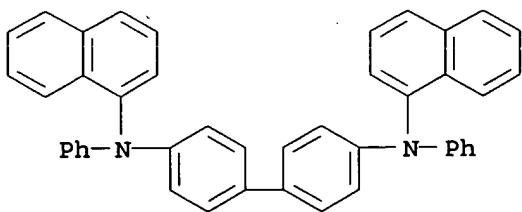
CN 1,4-Benzenediamine, N-[1,1'-biphenyl]-4-yl-N',N'-bis[4-([1,1'-biphenyl]-4-yl(3-methylphenyl)amino)phenyl]-N-(3-methylphenyl)- (9CI) (CA INDEX NAME)



IC ICM C07C211-54  
ICS C09K011-06; H05B033-14; H05B033-22  
CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)  
Section cross-reference(s): 25, 74  
ST electroluminescent device biphenylphenylaminotriphenylamine hole transporter; flat panel display electroluminescent device; phenylamine hole transporter electroluminescent device  
IT Optical imaging devices  
(full-color flat panel displays; tris[biphenyl(phenyl)amino]triphenylamines as hole transporters in electroluminescent devices for high luminance)  
IT Hole transport  
(hole transporters; tris[biphenyl(phenyl)amino]triphenylamines as hole transporters in electroluminescent devices for high luminance)  
IT Electroluminescent devices  
(tris[biphenyl(phenyl)amino]triphenylamines as hole transporters in electroluminescent devices for high luminance)  
IT 134008-76-7  
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)  
(hole transporter; tris[biphenyl(phenyl)amino]triphenylamines as hole transporters in electroluminescent devices for high luminance)  
IT 2085-33-8, Tris(8-quinolinolato)aluminum  
RL: DEV (Device component use); USES (Uses)  
(light-emitting layer; tris[biphenyl(phenyl)amino]triphenylamines as hole transporters in electroluminescent devices for high luminance)  
IT 281678-62-4P 281678-63-5P  
RL: DEV (Device component use); IMF (Industrial manufacture);  
TEM (Technical or engineered material use); PREP (Preparation);  
USES (Uses)  
(tris[biphenyl(phenyl)amino]triphenylamines as hole transporters in electroluminescent devices for high luminance)  
IT 4181-20-8 32228-99-2, N-Phenyl-4-biphenylamine 148935-08-4

RL: RCT (Reactant); RACT (Reactant or reagent)  
(tris[biphenyl(phenyl)amino]triphenylamines as hole transporters in  
electroluminescent devices for high luminance)

L48 ANSWER 18 OF 39 CAPLUS COPYRIGHT 2003 ACS  
ACCESSION NUMBER: 2001:400152 CAPLUS  
DOCUMENT NUMBER: 135:187085  
TITLE: Polarized electroluminescence from photocrosslinkable  
nematic fluorene bisacrylates  
AUTHOR(S): Jandke, Markus; Hanft, D.; Strohriegl, Peter;  
Whitehead, Katharine S.; Grell, Martin; Bradley, Donal  
D. C.  
CORPORATE SOURCE: Lehrstuhl fur Makromolekulare Chemie I und Bayreuther  
Institut fur Makromolekulforschung BIMF, Universitat  
Bayreuth, Bayreuth, D-95440, Germany  
SOURCE: Proceedings of SPIE-The International Society for  
Optical Engineering (2001), 4105(Organic  
Light-Emitting Materials and Devices IV), 338-347  
CODEN: PSISDG; ISSN: 0277-786X  
PUBLISHER: SPIE-The International Society for Optical Engineering  
DOCUMENT TYPE: Journal  
LANGUAGE: English  
AB The monodomain-alignment of new photocrosslinkable fluorene bisacrylate  
model compds. and oligomers is reported. The orientation of the nematic  
LC- phase is preserved by photopolymer. in an oriented LC- network.  
Monodomain orientations of crosslinked fluorene bisacrylates were studied  
by UV-visible and photoluminescence spectroscopy comparing different  
alignment layers. OLEDs were fabricated using oriented fluorene  
bisacrylates and polyfluorenes leading to state-of-the-art polarization  
ratios for electroluminescence of up to 25 and brightnesses of .apprx.250  
Cd/m<sup>2</sup>.  
IT 123847-85-8P  
RL: DEV (Device component use); PNU (Preparation, unclassified); PRP  
(Properties); PREP (Preparation); USES (Uses)  
(polarized electroluminescence from photocrosslinkable  
nematic fluorene bisacrylates)  
RN 123847-85-8 CAPLUS  
CN [1,1'-Biphenyl]-4,4'-diamine, N,N'-di-1-naphthalenyl-N,N'-diphenyl- (9CI)  
(CA INDEX NAME)



CC 73-5 (Optical, Electron, and Mass Spectroscopy and Other Related  
Properties)

Section cross-reference(s): 36, 75  
ST polarized electroluminescence photocrosslinkable nematic fluorene bisacrylate liq crystal  
IT Liquid crystals  
(nematic; polarized electroluminescence from photocrosslinkable nematic fluorene bisacrylates)  
IT Dichroism  
Electroluminescent devices  
Luminescence  
UV and visible spectra  
(polarized electroluminescence from photocrosslinkable nematic fluorene bisacrylates)  
IT Luminescence, electroluminescence  
(polarized; polarized electroluminescence from photocrosslinkable nematic fluorene bisacrylates)  
IT 25036-53-7P 25038-81-7P 82334-57-4P 123847-85-8P  
123864-00-6P 355135-02-3P 355135-03-4P 355135-04-5P 355135-05-6P  
RL: DEV (Device component use); PNU (Preparation, unclassified); PRP  
(Properties); PREP (Preparation); USES (Uses)  
(polarized electroluminescence from photocrosslinkable nematic fluorene bisacrylates)  
IT 188200-91-1P 355135-06-7P 355135-07-8P 355135-08-9P 355135-09-0P  
355135-10-3P  
RL: PNU (Preparation, unclassified); RCT (Reactant); PREP (Preparation);  
RACT (Reactant or reagent)  
(polarized electroluminescence from photocrosslinkable nematic fluorene bisacrylates)  
IT 1133-80-8 16433-88-8  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(polarized electroluminescence from photocrosslinkable nematic fluorene bisacrylates)

REFERENCE COUNT: 27 THERE ARE 27 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L48 ANSWER 19 OF 39 CAPLUS COPYRIGHT 2003 ACS  
ACCESSION NUMBER: 2001:269316 CAPLUS  
DOCUMENT NUMBER: 134:303134  
TITLE: Aryl amine containing heterocyclic rings for organic electroluminescent device  
INVENTOR(S): Kido, Junji; Uchishiro, Tsuyoshi; Ichiyanagi, Toshiyuki  
PATENT ASSIGNEE(S): Chemipro Kasei K. K., Japan  
SOURCE: Jpn. Kokai Tokkyo Koho, 35 pp.  
CODEN: JKXXAF  
DOCUMENT TYPE: Patent  
LANGUAGE: Japanese  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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JP 2001106678	A2	20010417	JP 1999-283470	19991004

PRIORITY APPLN. INFO.:

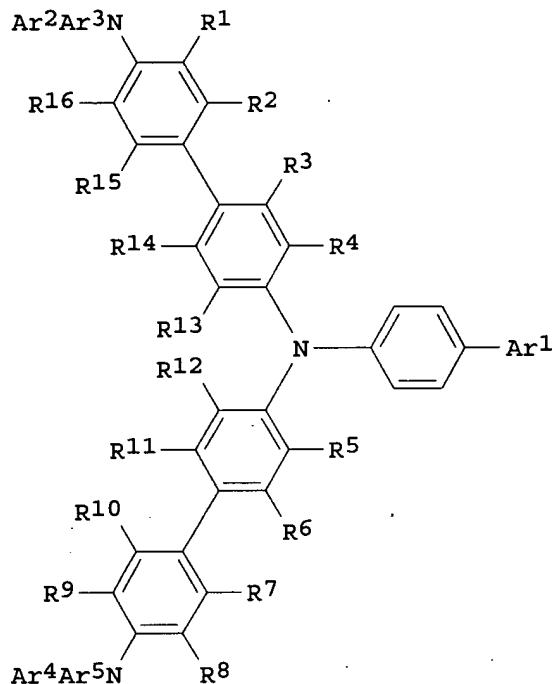
JP 1999-283470

19991004

OTHER SOURCE(S):

MARPAT 134:303134

GI



AB The title aryl amine has structure I ( Ar1 = heterocyclics; R1-16 = H, amino, alkyl, alkoxy, aryl; Ar2-5 = aryl) and  $\geq 750$  mol. wt. The aryl amine has a relatively large mol. wt. and provides the EL device of the excellence in the luminescent efficiency, coatability, durability, and storageability.

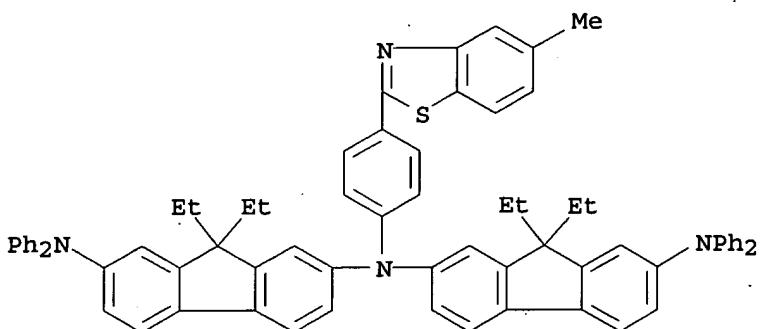
IT 334698-21-4P

RL: PRP (Properties); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(aryl amine contg. heterocyclic rings for org.  
electroluminescent device)

RN 334698-21-4 CAPLUS

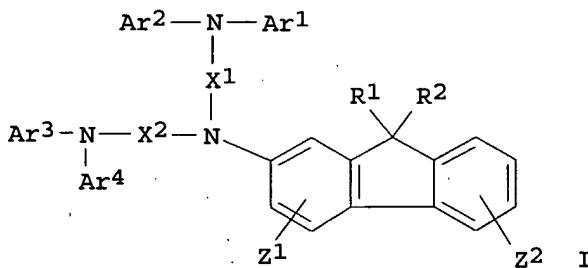
CN 9H-Fluorene-2,7-diamine, N-[7-(diphenylamino)-9,9-diethyl-9H-fluoren-2-yl]-9,9-diethyl-N-[4-(5-methyl-2-benzothiazolyl)phenyl]-N',N'-diphenyl- (9CI)  
(CA INDEX NAME)



IC ICM C07D277-66  
ICS C07D317-00; C07D417-14; H05B033-14; H05B033-22  
CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)  
Section cross-reference(s): 28  
ST aryl amine heterocyclic ring org electroluminescent device  
IT Amines, properties  
RL: PRP (Properties); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)  
(aryl amine contg. heterocyclic rings for org. electroluminescent device)  
IT Electroluminescent devices  
(aryl amine contg. heterocyclic rings for org. electroluminescent device)  
IT Heterocyclic compounds  
RL: PRP (Properties); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)  
(aryl amine contg. heterocyclic rings for org. electroluminescent device)  
IT Electroluminescent devices  
(panels; aryl amine contg. heterocyclic rings for org. electroluminescent device)  
IT 334698-17-8P 334698-18-9P 334698-20-3P 334698-21-4P  
RL: PRP (Properties); SPN (Synthetic preparation); TEM  
(Technical or engineered material use); PREP (Preparation); USES  
(Uses)  
(aryl amine contg. heterocyclic rings for org. electroluminescent device)  
IT 86-74-8, Carbazole 92-86-4, 4,4'-Dibromobiphenyl 122-39-4,  
Diphenylamine, reactions 3001-15-8, 4,4'-Diiodobiphenyl 37615-72-8  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(aryl amine contg. heterocyclic rings for org. electroluminescent device)  
IT 167218-38-4P 197969-58-7P 202831-64-9P 212385-73-4P 334698-19-0P  
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT  
(Reactant or reagent)  
(aryl amine contg. heterocyclic rings for org. electroluminescent device)

L48 ANSWER 20 OF 39 CAPLUS COPYRIGHT 2003 ACS  
 ACCESSION NUMBER: 2001:109943 CAPLUS  
 DOCUMENT NUMBER: 134:170609  
 TITLE: Novel fluorene ring-containing amines suitable as hole  
 transporters  
 INVENTOR(S): Nakatsuka, Masakatsu; Shimamura, Takehiko  
 PATENT ASSIGNEE(S): Mitsui Chemicals Inc., Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 42 pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2001039934	A2	20010213	JP 1999-212166	19990727
PRIORITY APPLN. INFO.:			JP 1999-212166	19990727
OTHER SOURCE(S):		MARPAT 134:170609		
GI				



AB The amines I [Ar<sub>1</sub>-Ar<sub>4</sub> = (un)substituted aryl; NAr<sub>1</sub>Ar<sub>2</sub> and NAr<sub>3</sub>Ar<sub>4</sub> may be N-heterocyclyl; R<sub>1</sub>, R<sub>2</sub> = H, linear, branched, or cyclic alkyl, cycloalkyl, (un)substituted aryl, (un)substituted aralkyl; Z<sub>1</sub>, Z<sub>2</sub> = H, halo, linear, branched, or cyclic alkyl, alkoxy, (un)substituted aryl; X<sub>1</sub>, X<sub>2</sub> = (A<sub>1</sub>X<sub>11</sub>)mA<sub>2</sub>; A<sub>1</sub>, A<sub>2</sub> = (un)substituted phenylene, (un)substituted naphthylene; X<sub>11</sub> = direct bond, O, S; m = 0, 1] are claimed. The compds. are suitable as hole transporting materials for org. electroluminescent devices.

IT 238422-65-6P 238422-66-7P 238422-69-0P  
 238422-73-6P 238422-75-8P 238422-76-9P  
 325492-17-9P 325492-18-0P

RL: DEV (Device component use); SPN (Synthetic preparation);

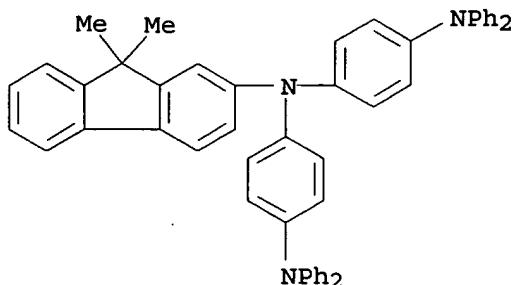
PREP (Preparation); USES (Uses)

(prepn. of novel fluorene ring-contg. amines suitable as hole  
 transporters for org. electroluminescent devices)

RN 238422-65-6 CAPLUS

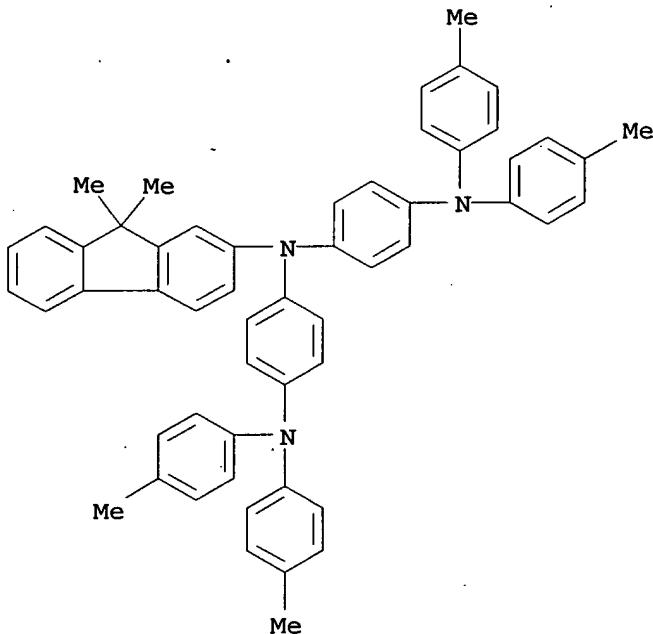
CN 1,4-Benzenediamine, N-(9,9-dimethyl-9H-fluoren-2-yl)-N-[4-

(diphenylamino)phenyl]-N',N'-diphenyl- (9CI) (CA INDEX NAME)



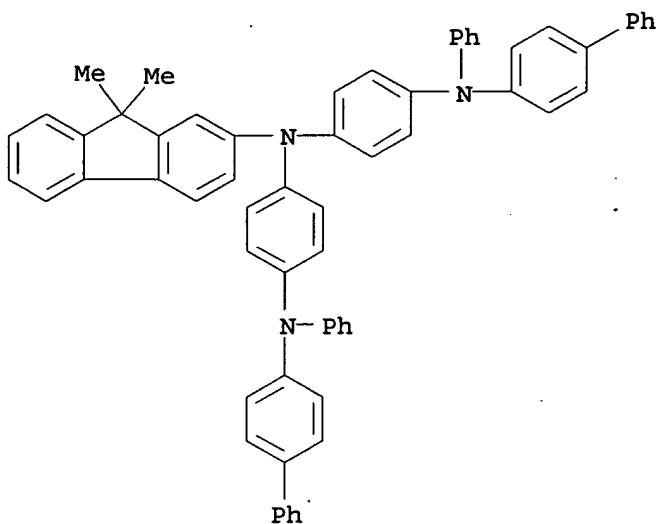
RN 238422-66-7 CAPLUS

CN 1,4-Benzenediamine, N-[4-[bis(4-methylphenyl)amino]phenyl]-N-(9,9-dimethyl-9H-fluoren-2-yl)-N',N'-bis(4-methylphenyl)- (9CI) (CA INDEX NAME)



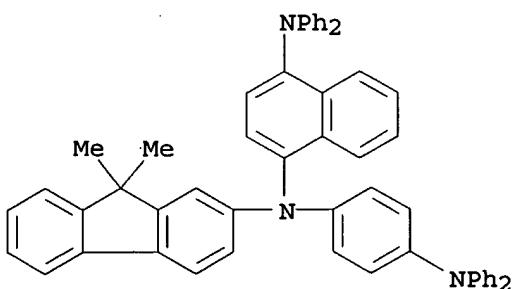
RN 238422-69-0 CAPLUS

CN 1,4-Benzenediamine, N-[1,1'-biphenyl]-4-yl-N'-[4-((1,1'-biphenyl)-4-ylphenylamino)phenyl]-N'-(9,9-dimethyl-9H-fluoren-2-yl)-N-phenyl- (9CI)  
(CA INDEX NAME)



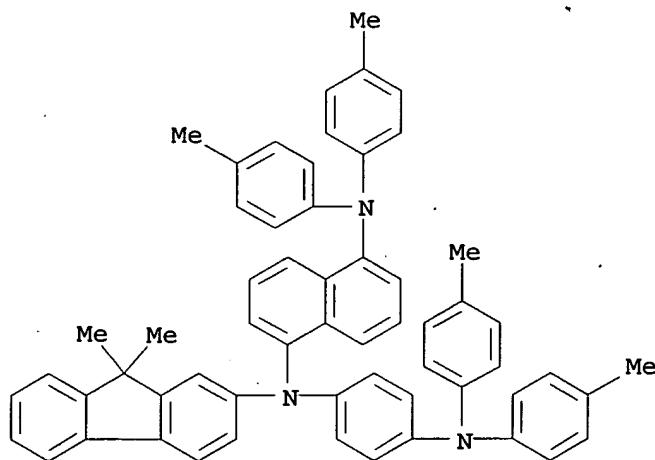
RN 238422-73-6 CAPLUS

CN 1,4-Naphthalenediamine, N-(9,9-dimethyl-9H-fluoren-2-yl)-N-[4-(diphenylamino)phenyl]-N',N'-diphenyl- (9CI) (CA INDEX NAME)



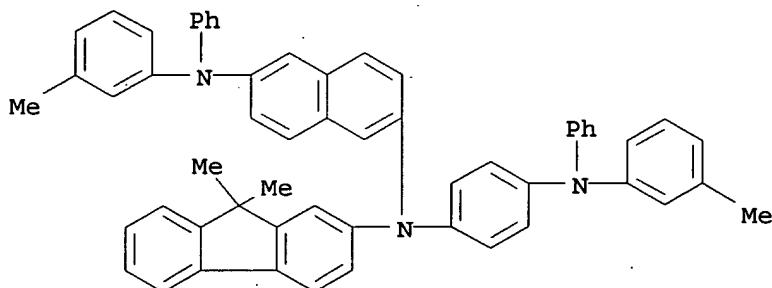
RN 238422-75-8 CAPLUS

CN 1,5-Naphthalenediamine, N-[4-[bis(4-methylphenyl)amino]phenyl]-N-(9,9-dimethyl-9H-fluoren-2-yl)-N',N'-bis(4-methylphenyl)- (9CI) (CA INDEX NAME)



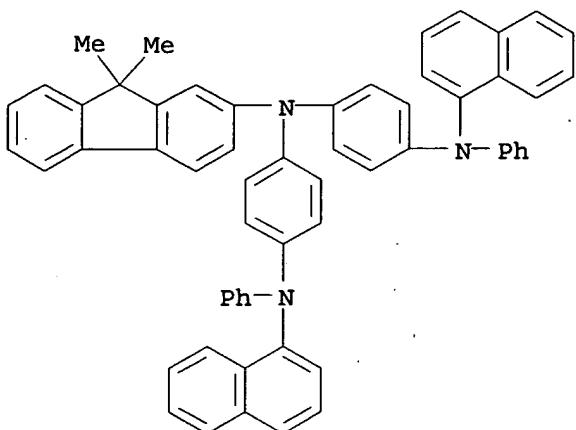
RN 238422-76-9 CAPLUS

CN 2,6-Naphthalenediamine, N-(9,9-dimethyl-9H-fluoren-2-yl)-N'-(3-methylphenyl)-N-[4-[(3-methylphenyl)phenylamino]phenyl]-N'-phenyl- (9CI)  
(CA INDEX NAME)



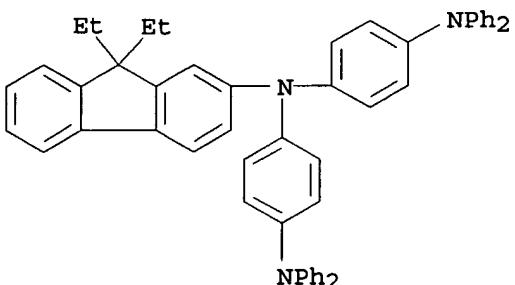
RN 325492-17-9 CAPLUS

CN 1,4-Benzenediamine, N-(9,9-dimethyl-9H-fluoren-2-yl)-N'-1-naphthalenyl-N-[4-(1-naphthalenylphenylamino)phenyl]-N'-phenyl- (9CI) (CA INDEX NAME)



RN 325492-18-0 CAPLUS

CN 1,4-Benzenediamine, N-(9,9-diethyl-9H-fluoren-2-yl)-N-[4-(diphenylamino)phenyl]-N',N'-diphenyl- (9CI) (CA INDEX NAME)



IC ICM C07C211-61

ICS C07C217-92; C07C217-94; C07C323-37; C07D209-86; C07D265-38;  
C07D333-34

CC 73-5 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

Section cross-reference(s): 25, 27

ST fluorene ring amine hole transporter org electroluminescent device

IT Electroluminescent devices

Hole transport

(prepn. of novel fluorene ring-contg. amines suitable as hole  
transporters for org. electroluminescent devices)

IT 238422-65-6P 238422-66-7P 238422-69-0P

238422-72-5P 238422-73-6P 238422-75-8P

238422-76-9P 238422-78-1P 238422-79-2P 238422-80-5P

238422-86-1P 238422-87-2P 238422-91-8P 238422-95-2P

325492-17-9P 325492-18-0P 325492-19-1P 325492-20-4P

325492-21-5P

RL: DEV (Device component use); SPN (Synthetic preparation);  
PREP (Preparation); USES (Uses)

(prep. of novel fluorene ring-contg. amines suitable as hole  
transporters for org. electroluminescent devices)

IT 29344-76-1 144981-85-1 144981-87-3 167218-39-5 198026-05-0  
207447-39-0 309715-40-0 309715-44-4 309715-46-6 309715-50-2  
325492-22-6 325492-23-7 325492-24-8 325492-25-9 325492-26-0  
325492-27-1 325492-28-2 325492-29-3 325492-30-6 325492-31-7

RL: RCT (Reactant); RACT (Reactant or reagent)

(prep. of novel fluorene ring-contg. amines suitable as hole  
transporters for org. electroluminescent devices)

L48 ANSWER 21 OF 39 CAPLUS COPYRIGHT 2003 ACS

ACCESSION NUMBER: 2000:833279 CAPLUS

DOCUMENT NUMBER: 134:23332

TITLE: Preparation of 2-( diarylamino)-7-  
bis[(di(aryl amino)aryl)amino]fluorene derivatives as  
hole transport materials for organic  
electroluminescent devices

INVENTOR(S): Nakatsuka, Masakatsu; Shimamura, Takehiko,

PATENT ASSIGNEE(S): Mitsui Chemical Industry Co., Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 59 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

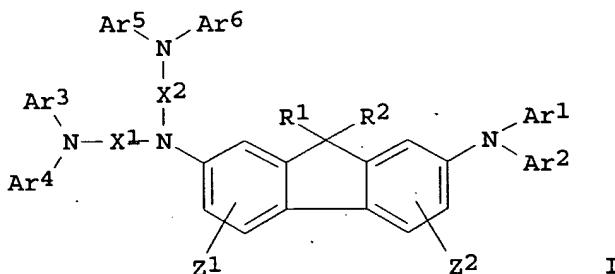
LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2000327640	A2	20001128	JP 1999-145130	19990525
PRIORITY APPLN. INFO.:			JP 1999-145130	19990525
OTHER SOURCE(S):	MARPAT 134:23332			

GI



AB The title compds. [I; Ar1 - Ar6 = (un)substituted aryl; NAr1Ar2, NAr3Ar4, or NAr5Ar6 forms N-contg. heterocycl; R1, R2 = H, linear or branched alkyl, (un)substituted aryl or aralkyl; Z1, Z2 = H, halo, linear or branched alkyl or alkoxy, (un)substituted aryl; X1, X2 = (un)substituted arylene] are prepd. Thus, 2-[N,N-bis(4-methylphenyl)amino]-9,9-dimethyl-9H-7-iodofluorene 10.3, N,N-bis[4-(diphenylamino)phenyl]amine 10, Cu

powder 10, and K<sub>2</sub>CO<sub>3</sub> 20 g were refluxed in o-dichlorobenzene at 190.degree. for 8 h to give 2-[bis(4-methylphenyl)amino]-9,9-dimethyl-7-[bis(4-(diphenylamino)phenyl)amino]fluorene (II) which was purified by sublimation at 350.degree. and 10-6 torr. An org. electroluminescent device with a hole transport layer of II, an electron transport layer of aluminum tris(8-quinolinolate), and a Ag/Mg cathode electrode vapor-deposited on an ITO transparent substrate exhibited green luminescence with brilliance of 580 cd/cm<sup>2</sup> at 50.degree., 6.5 V, and 10 mA/cm<sup>2</sup>.

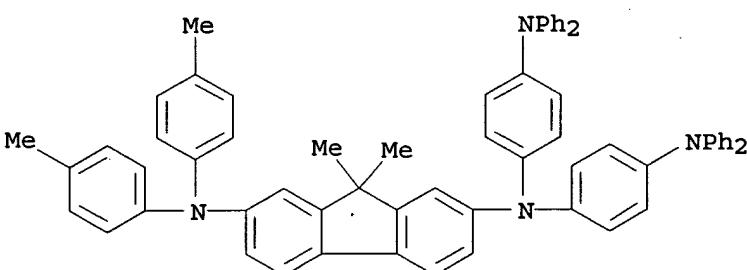
IT 228706-59-0P 228706-60-3P 228706-63-6P  
228706-66-9P 228706-68-1P 228706-73-8P  
228706-84-1P 309715-70-6P 309715-71-7P  
309715-73-9P 309715-76-2P 309715-79-5P  
309715-84-2P 309715-89-7P 309715-91-1P  
309715-93-3P 309715-95-5P 309715-97-7P  
309715-98-8P 309716-00-5P 309716-02-7P  
309716-04-9P 309716-06-1P 309716-08-3P

RL: DEV (Device component use); PRP (Properties); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(prepn. of (diarylarnino)[((arylamino)aryl)amino]fluorene derivs. as hole transport materials for org. electroluminescent devices)

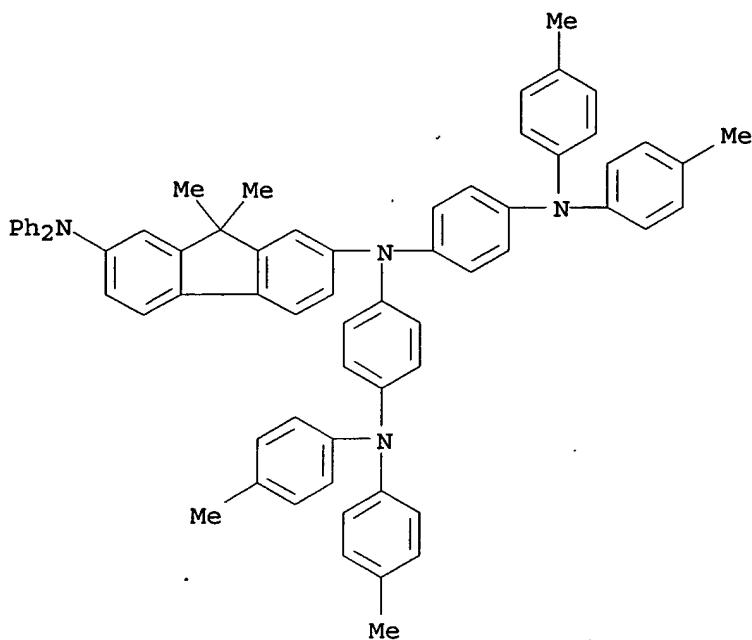
RN 228706-59-0 CAPLUS

CN 9H-Fluorene-2,7-diamine, N,N-bis[4-(diphenylamino)phenyl]-9,9-dimethyl-N',N'-bis(4-methylphenyl)- (9CI) (CA INDEX NAME)



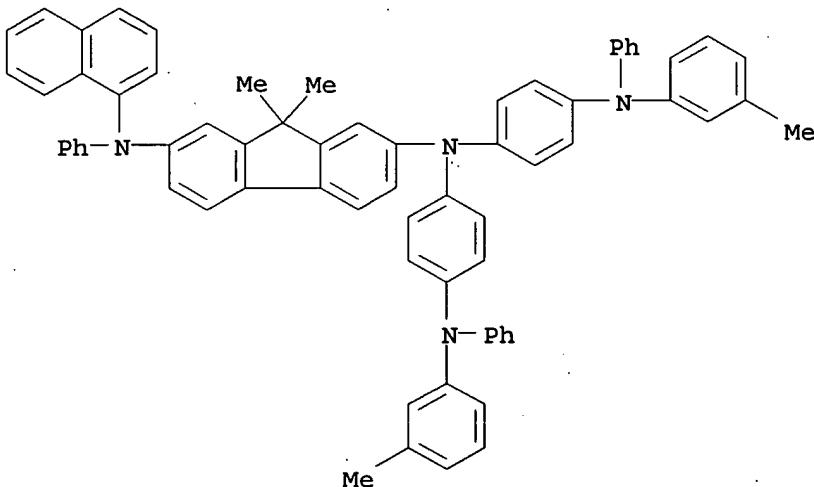
RN 228706-60-3 CAPLUS

CN 9H-Fluorene-2,7-diamine, N,N-bis[4-[bis(4-methylphenyl)amino]phenyl]-9,9-dimethyl-N',N'-diphenyl- (9CI) (CA INDEX NAME)



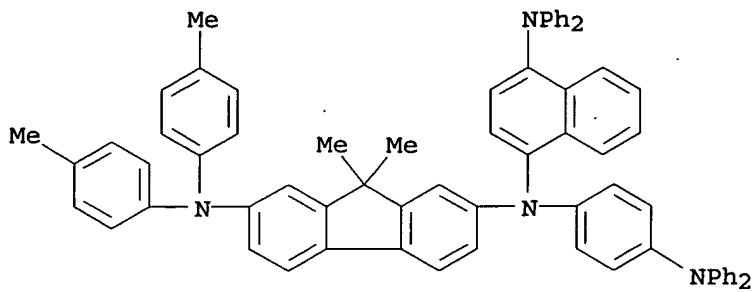
RN 228706-63-6 CAPLUS

CN 9H-Fluorene-2,7-diamine, 9,9-dimethyl-*N,N*-bis[4-[(3-methylphenyl)phenylamino]phenyl]-N'-1-naphthalenyl-*N,N*-phenyl- (9CI) (CA INDEX NAME)



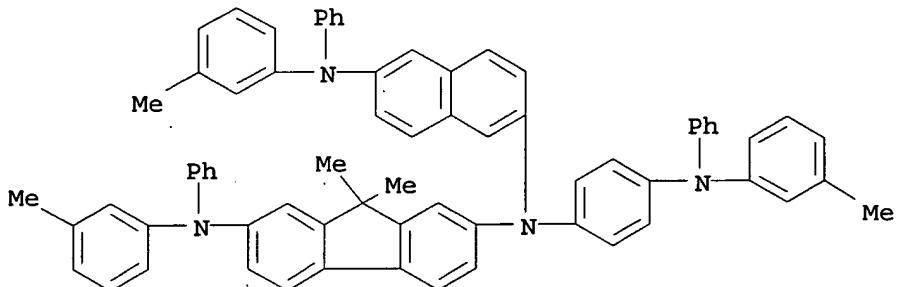
RN 228706-66-9 CAPLUS

CN 9H-Fluorene-2,7-diamine, *N*-[4-(diphenylamino)-1-naphthalenyl]-*N*-[4-(diphenylamino)phenyl]-9,9-dimethyl-*N',N'*-bis(4-methylphenyl)- (9CI) (CA INDEX NAME)



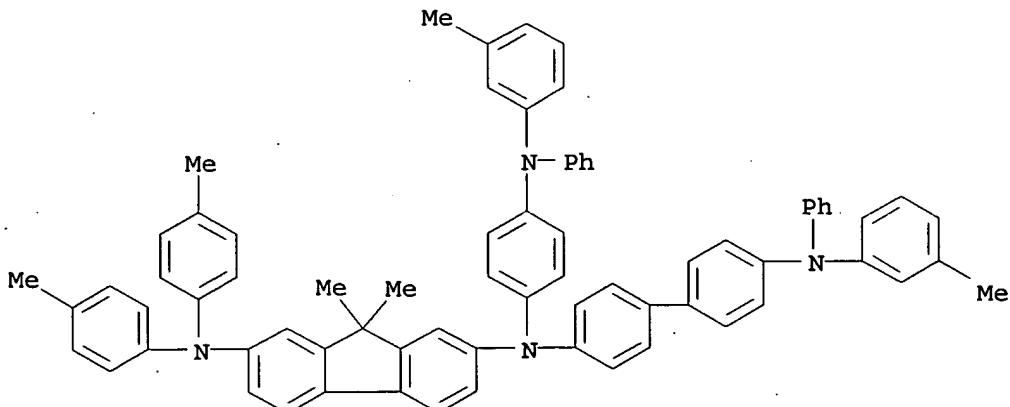
RN 228706-68-1 CAPLUS

CN 9H-Fluorene-2,7-diamine, 9,9-dimethyl-N-(3-methylphenyl)-N'-(6-[(3-methylphenyl)phenylamino]-2-naphthalenyl)-N''-(4-[(3-methylphenyl)phenylamino]phenyl)-N-phenyl - (9CI) (CA INDEX NAME)



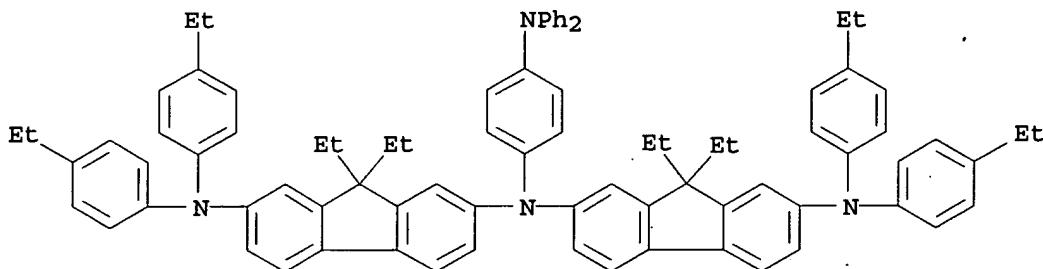
RN 228706-73-8 CAPLUS

CN 9H-Fluorene-2,7-diamine, 9,9-dimethyl-N,N-bis(4-methylphenyl)-N'-(4-[(3-methylphenyl)phenylamino][1,1'-biphenyl]-4-yl)-N''-(4-[(3-methylphenyl)phenylamino]phenyl)-N-phenyl - (9CI) (CA INDEX NAME)



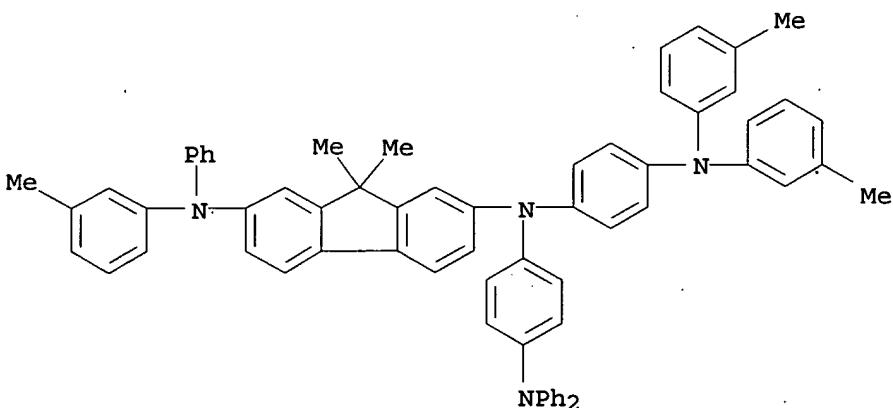
RN 228706-84-1 CAPLUS

CN 9H-Fluorene-2,7-diamine, N-[7-[bis(4-ethylphenyl)amino]-9,9-diethyl-9H-fluoren-2-yl]-N-[4-(diphenylamino)phenyl]-9,9-diethyl-N',N'-bis(4-ethylphenyl)- (9CI) (CA INDEX NAME)



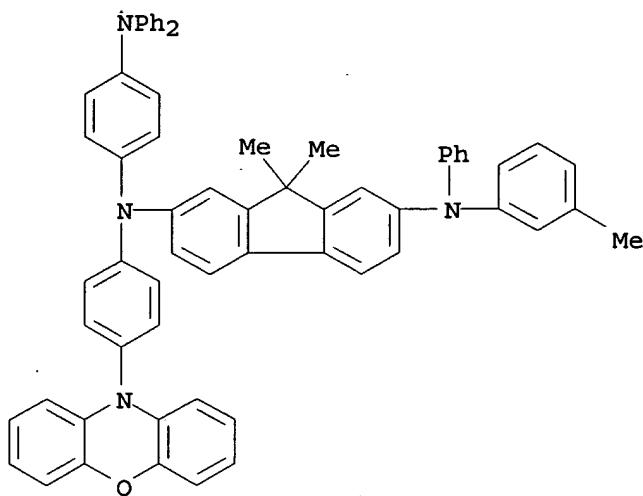
RN 309715-70-6 CAPLUS

CN 9H-Fluorene-2,7-diamine, N-[4-[bis(3-methylphenyl)amino]phenyl]-N-[4-(diphenylamino)phenyl]-9,9-dimethyl-N'-(3-methylphenyl)-N'-phenyl- (9CI) (CA INDEX NAME)



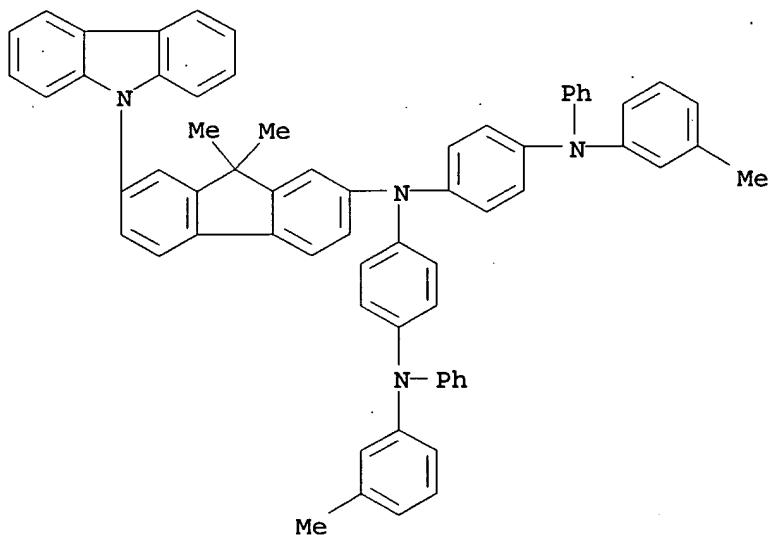
RN 309715-71-7 CAPLUS

CN 9H-Fluorene-2,7-diamine, N-[4-(diphenylamino)phenyl]-9,9-dimethyl-N'-(3-methylphenyl)-N-[4-(10H-phenoxazin-10-yl)phenyl]-N'-phenyl- (9CI) (CA INDEX NAME)



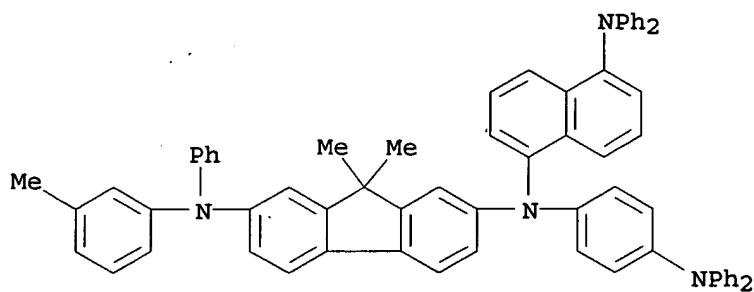
RN 309715-73-9 CAPLUS

CN 1,4-Benzenediamine, N-[7-(9H-carbazol-9-yl)-9,9-dimethyl-9H-fluoren-2-yl]-N'-(3-methylphenyl)-N-[4-[(3-methylphenyl)phenylamino]phenyl]-N'-phenyl- (9CI) (CA INDEX NAME)



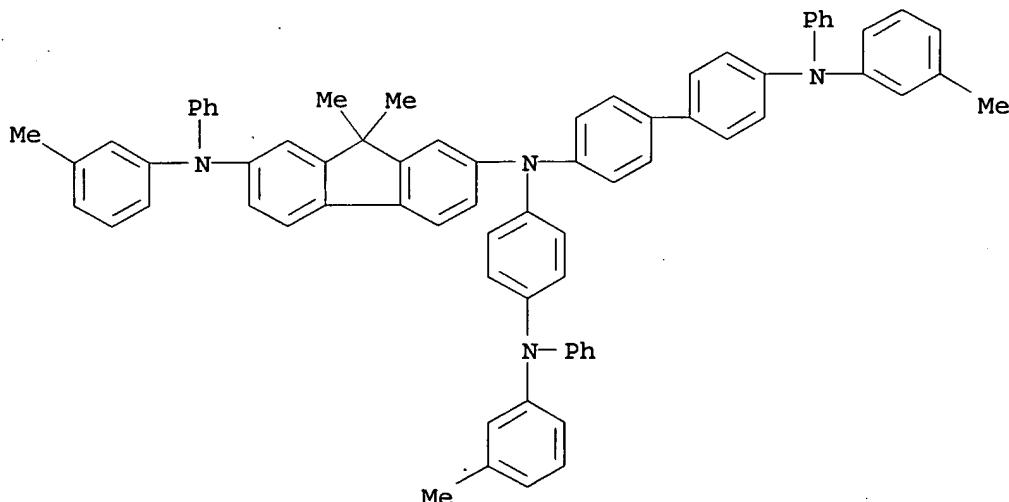
RN 309715-76-2 CAPLUS

CN 9H-Fluorene-2,7-diamine, N-[5-(diphenylamino)-1-naphthalenyl]-N-[4-(diphenylamino)phenyl]-9,9-dimethyl-N'-(3-methylphenyl)-N'-phenyl- (9CI) (CA INDEX NAME)



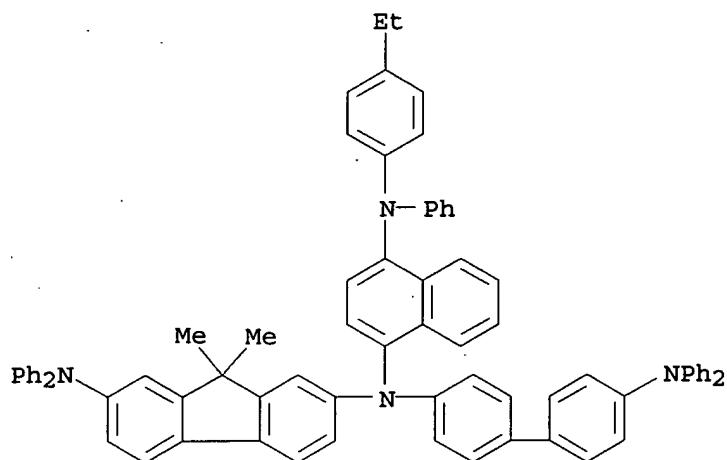
RN 309715-79-5 CAPLUS

CN 9H-Fluorene-2,7-diamine, 9,9-dimethyl-N-(3-methylphenyl)-N'-(4-[(3-methylphenyl)phenylamino]biphenyl-4-yl)-N''-(4-[(3-methylphenyl)phenylamino]phenyl)-N-phenyl- (9CI) (CA INDEX NAME)



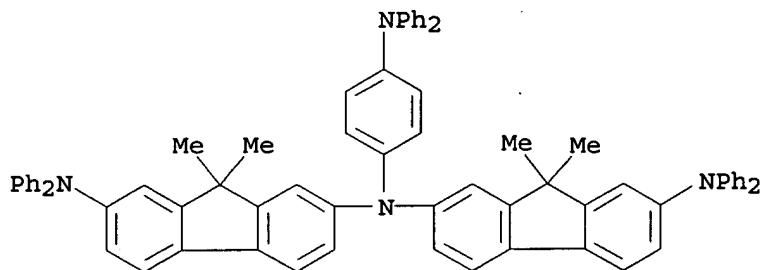
RN 309715-84-2 CAPLUS

CN 9H-Fluorene-2,7-diamine, N-[4'-(diphenylamino)biphenyl-4-yl]-N-[4-[(4-ethylphenyl)phenylamino]-1-naphthalenyl]-9,9-dimethyl-N',N'-diphenyl- (9CI) (CA INDEX NAME)



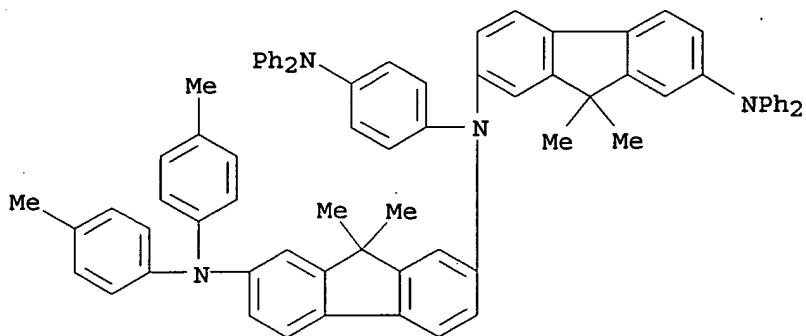
RN 309715-89-7 CAPLUS

CN 9H-Fluorene-2,7-diamine, N-[2-(diphenylamino)-9,9-dimethyl-9H-fluoren-7-yl]-N-[4-(diphenylamino)phenyl]-9,9-dimethyl-N',N'-diphenyl- (9CI) (CA INDEX NAME)



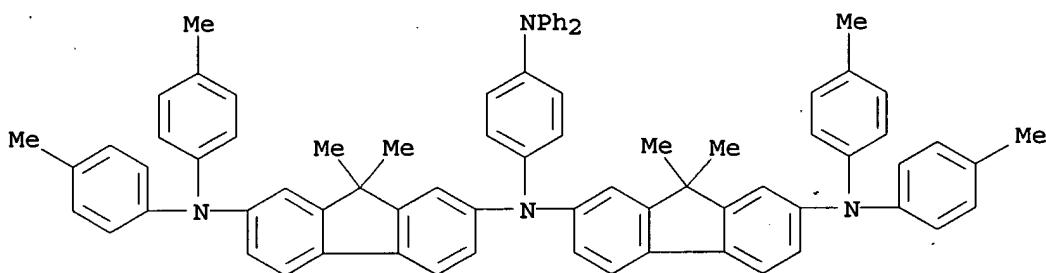
RN 309715-91-1 CAPLUS

CN 9H-Fluorene-2,7-diamine, N-[7-[bis(4-methylphenyl)amino]-9,9-dimethyl-9H-fluoren-2-yl]-N-[4-(diphenylamino)phenyl]-9,9-dimethyl-N',N'-diphenyl- (9CI) (CA INDEX NAME)



RN 309715-93-3 CAPLUS

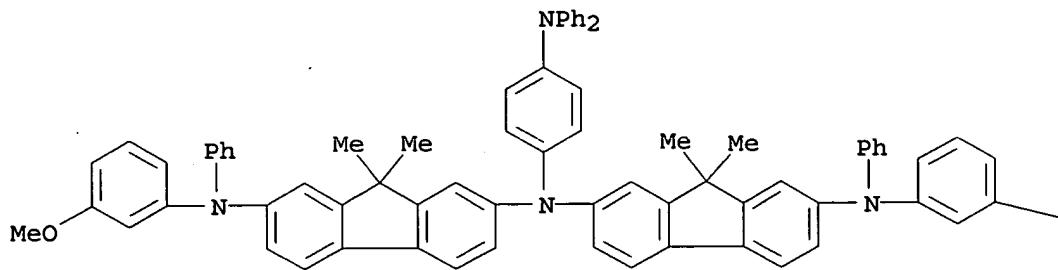
CN 9H-Fluorene-2,7-diamine, N-[2-[bis(4-methylphenyl)amino]-9,9-dimethyl-9H-fluoren-7-yl]-N-[4-(diphenylamino)phenyl]-9,9-dimethyl-N',N'-bis(4-methylphenyl)- (9CI) (CA INDEX NAME)



RN 309715-95-5 CAPLUS

CN 9H-Fluorene-2,7-diamine, N-[4-(diphenylamino)phenyl]-N'-(3-methoxyphenyl)-N-[2-[(3-methoxyphenyl)phenylamino]-9,9-dimethyl-9H-fluoren-7-yl]-9,9-dimethyl-N'-phenyl- (9CI) (CA INDEX NAME)

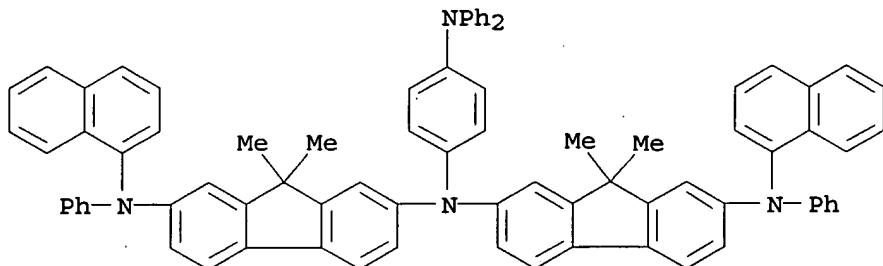
PAGE 1-A



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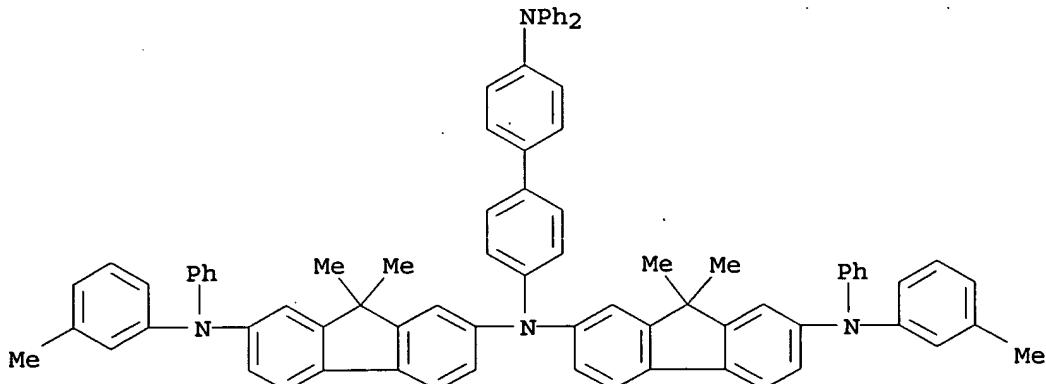
RN 309715-97-7 CAPLUS

CN 9H-Fluorene-2,7-diamine, N-[9,9-dimethyl-2-(1-naphthalenylphenylamino)-9H-fluoren-7-yl]-N-[4-(diphenylamino)phenyl]-9,9-dimethyl-N'-1-naphthalenyl-N'-phenyl- (9CI) (CA INDEX NAME)



RN 309715-98-8 CAPLUS

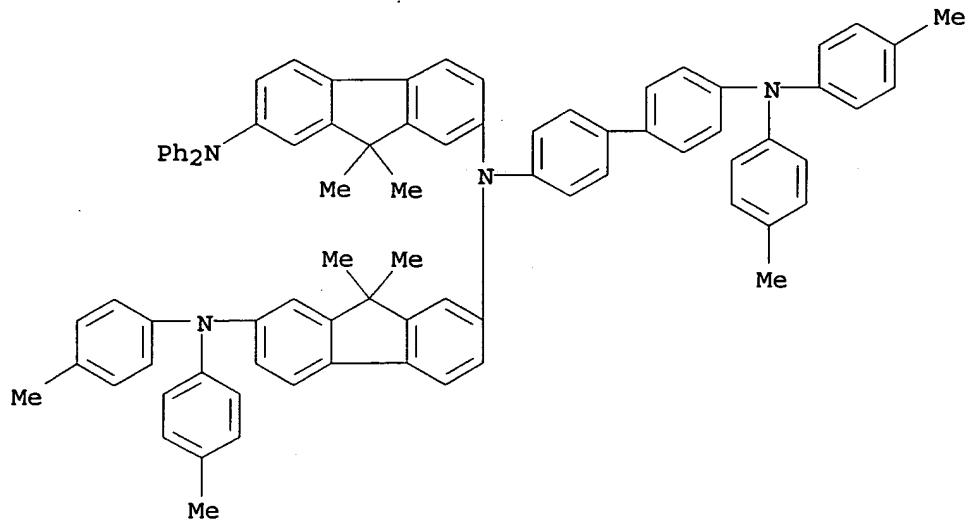
CN 9H-Fluorene-2,7-diamine, N-[9,9-dimethyl-2-[(3-methylphenyl)phenylamino]-9H-fluoren-7-yl]-N-[4'-(diphenylamino)[1,1'-biphenyl]-4-yl]-9,9-dimethyl-N'-(3-methylphenyl)-N'-phenyl- (9CI) (CA INDEX NAME)



RN 309716-00-5 CAPLUS

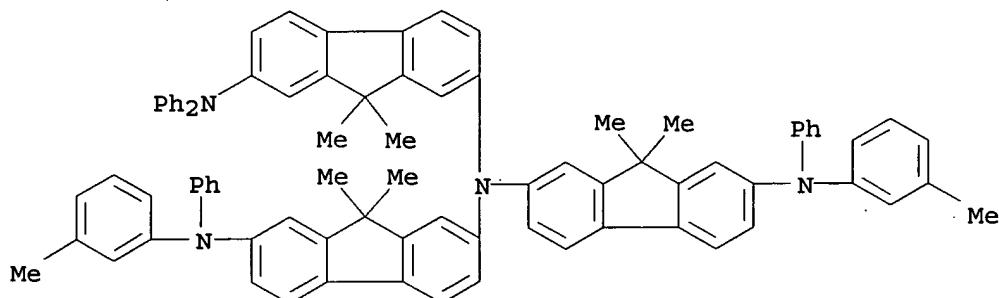
CN 9H-Fluorene-2,7-diamine, N-[4'-(bis(4-methylphenyl)amino)[1,1'-biphenyl]-4-

yl] -N- [7- [bis(4-methylphenyl)amino] -9,9-dimethyl-9H-fluoren-2-yl] -9,9-dimethyl-N',N'-diphenyl- (9CI) (CA INDEX NAME)



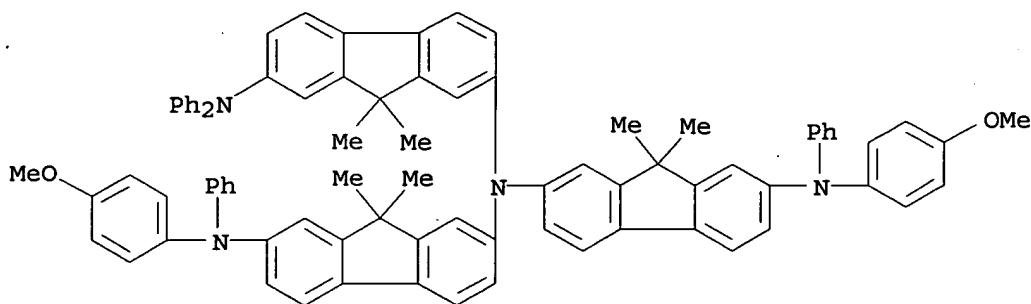
RN 309716-02-7 CAPLUS

CN 9H-Fluorene-2,7-diamine, N-[9,9-dimethyl-2-[(3-methylphenyl)phenylamino]-9H-fluoren-7-yl]-N-[9,9-dimethyl-7-[(3-methylphenyl)phenylamino]-9H-fluoren-2-yl]-9,9-dimethyl-N',N'-diphenyl- (9CI) (CA INDEX NAME)



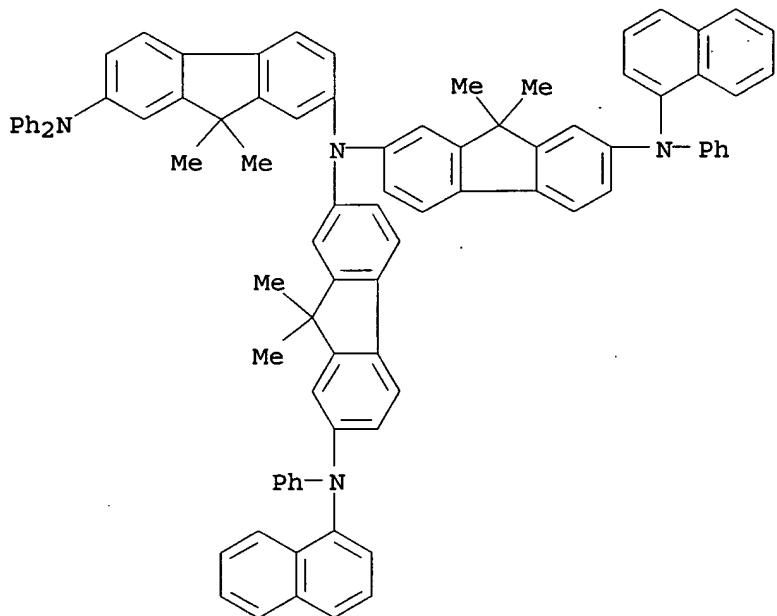
RN 309716-04-9 CAPLUS

CN 9H-Fluorene-2,7-diamine, N-[7-(diphenylamino)-9,9-dimethyl-9H-fluoren-2-yl]-N'-(4-methoxyphenyl)-N-[7-[(4-methoxyphenyl)phenylamino]-9,9-dimethyl-9H-fluoren-2-yl]-9,9-dimethyl-N'-phenyl- (9CI) (CA INDEX NAME)



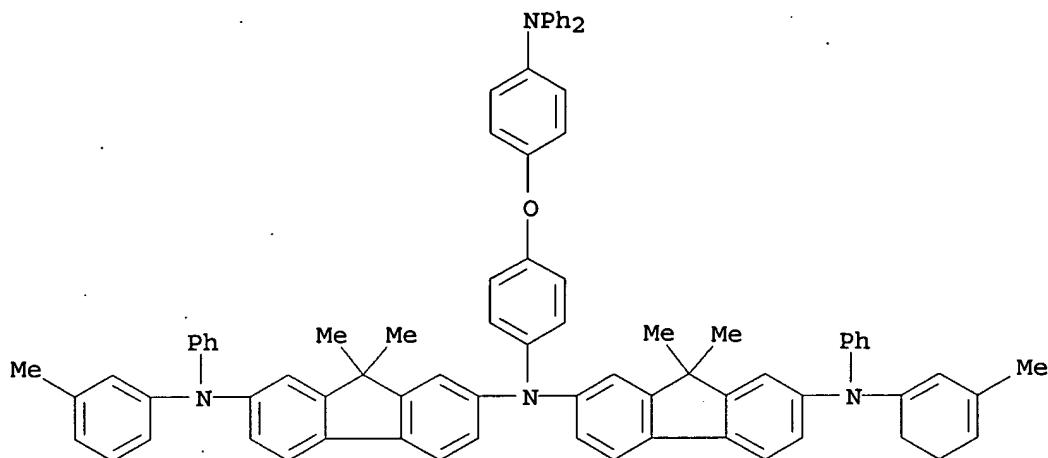
RN 309716-06-1 CAPLUS

CN 9H-Fluorene-2,7-diamine, N-[9,9-dimethyl-2-(1-naphthalenylphenylamino)-9H-fluoren-7-yl]-N-[9,9-dimethyl-7-(1-naphthalenylphenylamino)-9H-fluoren-2-yl]-9,9-dimethyl-N',N'-diphenyl- (9CI) (CA INDEX NAME)



RN 309716-08-3 CAPLUS

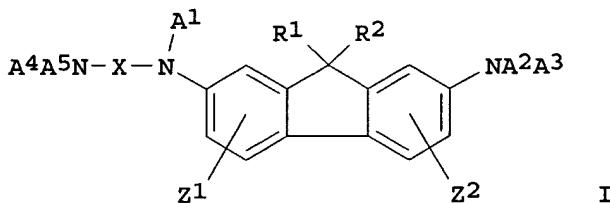
CN 9H-Fluorene-2,7-diamine, N-[9,9-dimethyl-7-[(3-methyl-1,3-cyclohexadien-1-yl)phenylamino]-9H-fluoren-2-yl]-N-[4-[4-(diphenylamino)phenoxy]phenyl]-9,9-dimethyl-N'-(3-methylphenyl)-N'-phenyl- (9CI) (CA INDEX NAME)



IC ICM C07C211-61  
 ICS C07C217-92; C07C323-37; C07D209-86; C07D265-38; C07D333-36  
 CC 73-5 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)  
 ST arylaminofluorene prepn hole transport material org electroluminescent device  
 IT Electroluminescent devices  
     (prepn. of (diarylarnino)[(arylamino)aryl]amino]fluorene derivs. as hole transport materials for org. electroluminescent devices)  
 IT 228706-59-0P 228706-60-3P 228706-63-6P  
     228706-66-9P 228706-68-1P 228706-73-8P  
     228706-79-4P 228706-84-1P 309715-70-6P  
     309715-71-7P 309715-73-9P 309715-76-2P  
     309715-79-5P 309715-82-0P 309715-84-2P 309715-87-5P  
     309715-89-7P 309715-91-1P 309715-93-3P  
     309715-95-5P 309715-97-7P 309715-98-8P  
     309716-00-5P 309716-02-7P 309716-04-9P  
     309716-06-1P 309716-08-3P  
 RL: DEV (Device component use); PRP (Properties); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)  
     (prepn. of (diarylarnino)[(arylamino)aryl]amino]fluorene derivs. as hole transport materials for org. electroluminescent devices)  
 IT 2350-01-8, 4-(N,N-Diphenylamino)aniline 29344-76-1, N,N-Di[4-(N,N-diphenylamino)phenyl]amine 84161-87-5 198026-05-0 207447-39-0  
     280113-41-9 308144-55-0 308144-57-2 308144-59-4 308144-61-8  
     308144-63-0, 2-(N,N-Diphenylamino)-9,9-dimethyl-9H-7-iodofluorene  
     308814-66-6 309715-32-0 309715-34-2 309715-36-4 309715-40-0  
     309715-42-2 309715-44-4 309715-46-6 309715-49-9 309715-50-2  
     309715-52-4 309715-55-7 309715-58-0 309715-60-4 309715-62-6  
     309715-64-8 309715-66-0  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
     (prepn. of (diarylarnino)[(arylamino)aryl]amino]fluorene derivs. as hole transport materials for org. electroluminescent devices)

L48 ANSWER 22 OF 39 CAPLUS COPYRIGHT 2003 ACS  
 ACCESSION NUMBER: 2000:828890 CAPLUS  
 DOCUMENT NUMBER: 134:11320  
 TITLE: 2,7-Diaminofluorene derivatives for hole transporting materials in organic electroluminescent devices  
 INVENTOR(S): Shimamura, Takehiko; Nakatsuka, Masakatsu  
 PATENT ASSIGNEE(S): Mitsui Chemical Industry Co., Ltd., Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 34 pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2000327638	A2	20001128	JP 1999-137325	19990518
PRIORITY APPLN. INFO.:			JP 1999-137325	19990518
OTHER SOURCE(S):	MARPAT	134:11320		
GI				

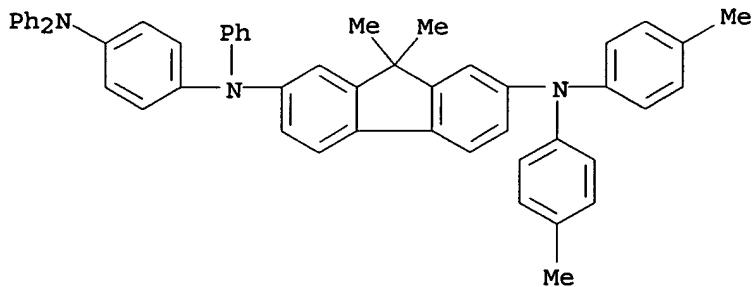


AB The fluorene derivs. are represented by I [A1-5 = aryl; R1, R2 = H, alkyl, aryl, aralkyl; Z1, Z2 = H, halo, alkyl (oxy), aryl; X = arylene]. Org. electroluminescent devices using I showed good stability and durability.

IT 227938-84-3P 227938-90-1P 227939-31-3P  
 227939-33-5P 227939-35-7P 227939-39-1P  
 227939-45-9P 227939-50-6P 308814-58-6P  
 308814-59-7P 308814-60-0P 308814-62-2P  
 308814-63-3P 308814-64-4P 308814-71-3P  
 RL: DEV (Device component use); PNU (Preparation, unclassified); PREP (Preparation); USES (Uses)  
 (hole transporter; diaminofluorene derivs. for hole transporters in org. electroluminescent devices)

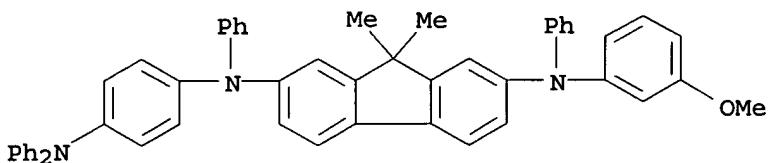
RN 227938-84-3 CAPLUS

CN 9H-Fluorene-2,7-diamine, N-[4-(diphenylamino)phenyl]-9,9-dimethyl-N',N'-bis(4-methylphenyl)-N-phenyl- (9CI) (CA INDEX NAME)



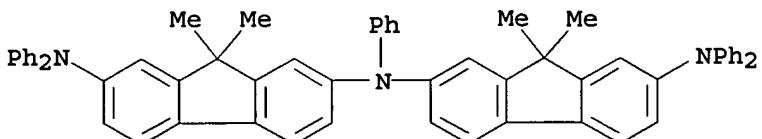
RN 227938-90-1 CAPLUS

CN 9H-Fluorene-2,7-diamine, N-[4-(diphenylamino)phenyl]-N'-(3-methoxyphenyl)-9,9-dimethyl-N,N'-diphenyl- (9CI) (CA INDEX NAME)



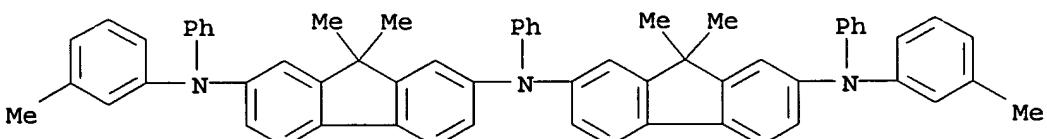
RN 227939-31-3 CAPLUS

CN 9H-Fluorene-2,7-diamine, N-[2-(diphenylamino)-9,9-dimethyl-9H-fluoren-7-yl]-9,9-dimethyl-N,N',N'-triphenyl- (9CI) (CA INDEX NAME)



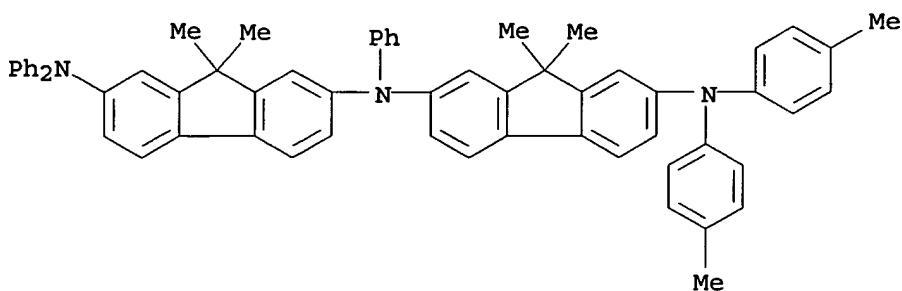
RN 227939-33-5 CAPLUS

CN 9H-Fluorene-2,7-diamine, N-[9,9-dimethyl-2-[(3-methylphenyl)phenylamino]-9H-fluoren-7-yl]-9,9-dimethyl-N'-(3-methylphenyl)-N,N'-diphenyl- (9CI) (CA INDEX NAME)



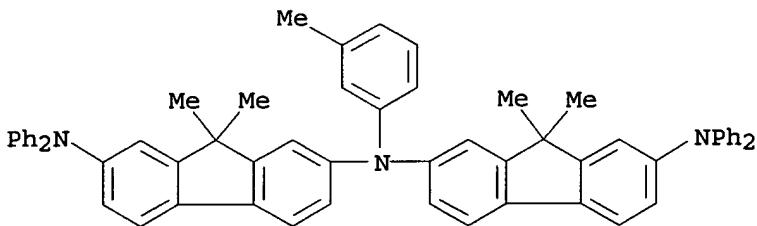
RN 227939-35-7 CAPLUS

CN 9H-Fluorene-2,7-diamine, N-[7-[bis(4-methylphenyl)amino]-9,9-dimethyl-9H-fluoren-2-yl]-9,9-dimethyl-N,N',N'-triphenyl- (9CI) (CA INDEX NAME)



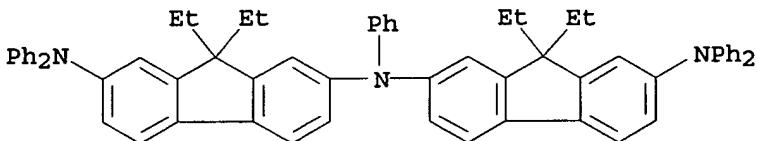
RN 227939-39-1 CAPLUS

CN 9H-Fluorene-2,7-diamine, N-[2-(diphenylamino)-9,9-dimethyl-9H-fluoren-7-yl]-9,9-dimethyl-N-(3-methylphenyl)-N',N'-diphenyl- (9CI) (CA INDEX NAME)



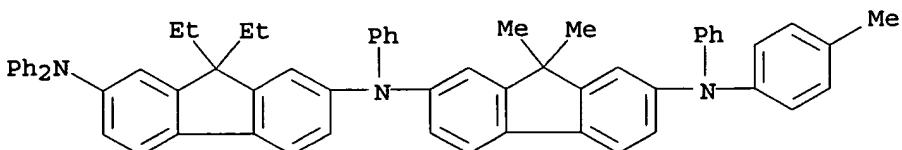
RN 227939-45-9 CAPLUS

CN 9H-Fluorene-2,7-diamine, N-[7-(diphenylamino)-9,9-diethyl-9H-fluoren-2-yl]-9,9-diethyl-N,N',N'-triphenyl- (9CI) (CA INDEX NAME)



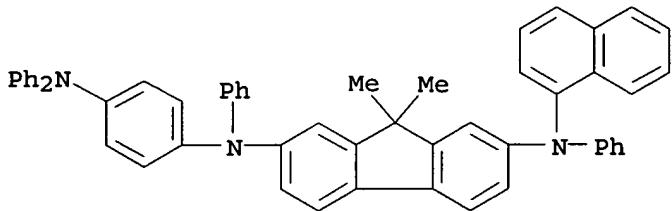
RN 227939-50-6 CAPLUS

CN 9H-Fluorene-2,7-diamine, N-[9,9-dimethyl-7-[(4-methylphenyl)phenylamino]-9H-fluoren-2-yl]-9,9-diethyl-N,N',N'-triphenyl- (9CI) (CA INDEX NAME)



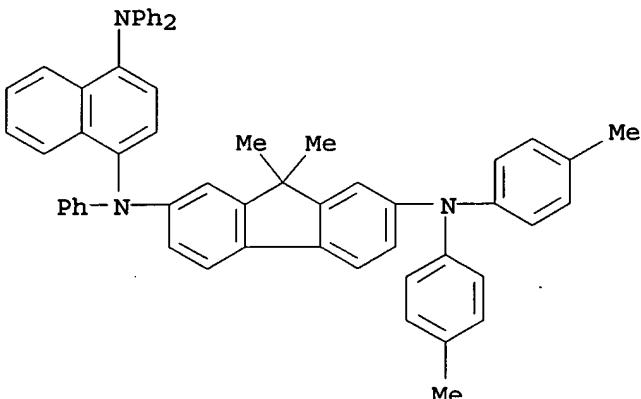
RN 308814-58-6 CAPLUS

CN 9H-Fluorene-2,7-diamine, N-[4-(diphenylamino)phenyl]-9,9-dimethyl-N'-1-naphthalenyl-N,N'-diphenyl- (9CI) (CA INDEX NAME)



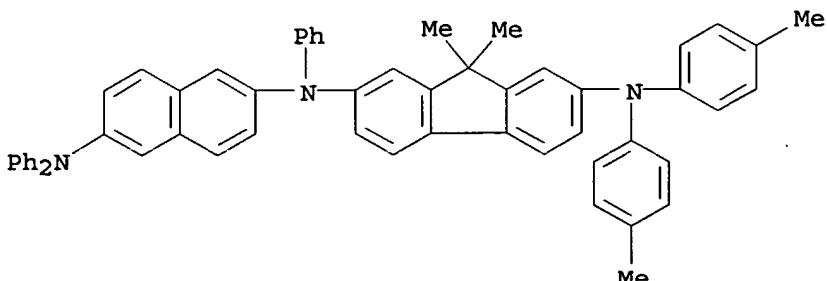
RN 308814-59-7 CAPLUS

CN 9H-Fluorene-2,7-diamine, N-[4-(diphenylamino)-1-naphthalenyl]-9,9-dimethyl-N',N'-bis(4-methylphenyl)-N-phenyl- (9CI) (CA INDEX NAME)



RN 308814-60-0 CAPLUS

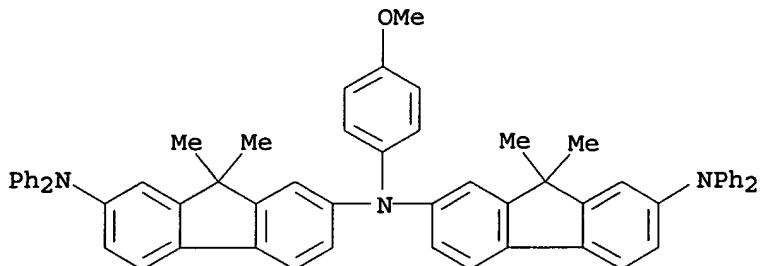
CN 9H-Fluorene-2,7-diamine, N-[6-(diphenylamino)-2-naphthalenyl]-9,9-dimethyl-N',N'-bis(4-methylphenyl)-N-phenyl- (9CI) (CA INDEX NAME)



RN 308814-62-2 CAPLUS

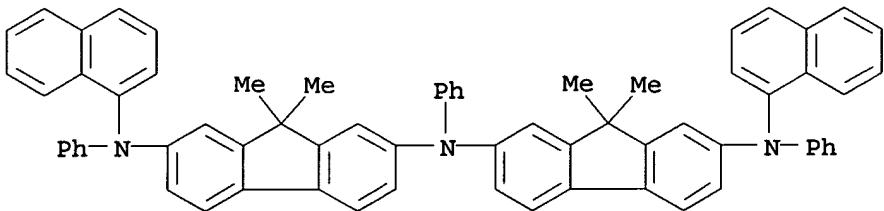
CN 9H-Fluorene-2,7-diamine, N-[2-(diphenylamino)-9,9-dimethyl-9H-fluoren-7-yl]-N-(4-methoxyphenyl)-9,9-dimethyl-N',N'-diphenyl- (9CI) (CA INDEX

NAME)



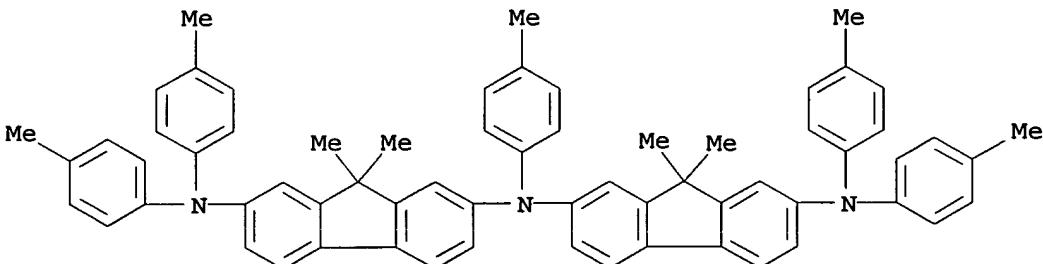
RN 308814-63-3 CAPLUS

CN 9H-Fluorene-2,7-diamine, N-[9,9-dimethyl-2-(1-naphthalenylphenylamino)-9H-fluoren-7-yl]-9,9-dimethyl-N'-1-naphthalenyl-N,N'-diphenyl- (9CI) (CA INDEX NAME)



RN 308814-64-4 CAPLUS

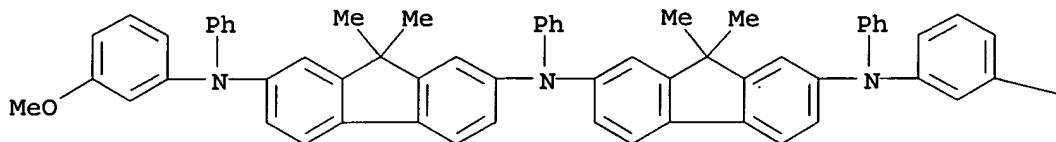
CN 9H-Fluorene-2,7-diamine, N-[2-[bis(4-methylphenyl)amino]-9,9-dimethyl-9H-fluoren-7-yl]-9,9-dimethyl-N,N',N'-tris(4-methylphenyl)- (9CI) (CA INDEX NAME)



RN 308814-71-3 CAPLUS

CN 9H-Fluorene-2,7-diamine, N-(3-methoxyphenyl)-N'-(2-[(3-methoxyphenyl)phenylamino]-9,9-dimethyl-9H-fluoren-7-yl)-9,9-dimethyl-N,N'-diphenyl- (9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 1-B

→ OMe

IC ICM C07C211-61  
ICS C07C217-92; C07C323-37; C07D209-86; C07D213-74; C07D265-38;  
C07D333-36; H05B033-14; H05B033-22

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)  
Section cross-reference(s): 25, 27, 28

ST aminofluorene deriv electroluminescent hole transporter

IT Electroluminescent devices  
(diaminofluorene derivs. for hole transporters in org. electroluminescent devices)

IT 227938-84-3P 227938-90-1P 227939-00-6P 227939-10-8P  
227939-11-9P 227939-26-6P 227939-31-3P 227939-33-5P  
227939-35-7P 227939-39-1P 227939-45-9P  
227939-50-6P 308814-58-6P 308814-59-7P  
308814-60-0P 308814-61-1P 308814-62-2P  
308814-63-3P 308814-64-4P 308814-65-5P  
308814-71-3P  
RL: DEV (Device component use); PNU (Preparation, unclassified); PREP (Preparation); USES (Uses)  
(hole transporter; diaminofluorene derivs. for hole transporters in org. electroluminescent devices)

IT 62-53-3, Aniline, reactions 104-94-9, 4-Methoxyaniline 108-44-1,  
3-Methylaniline, reactions 19606-98-5, 4-(N',N'-Diphenylamino)-N-phenylaniline 117170-45-3, 4-[4'-(N',N'-Diphenylamino)phenyloxy]-N-phenylaniline 167218-30-6 280113-41-9, 2-[N,N-Di(4'-methylphenyl)amino]-9,9-dimethyl-9H-7-iodofluorene 308144-55-0  
308144-57-2, 2-[N-(3'-Methoxyphenyl)-N-phenylamino]-9,9-dimethyl-9H-7-iodofluorene 308144-59-4, 2-[N-(1'-Naphthyl)-N-phenylamino]-9,9-dimethyl-9H-7-iodofluorene 308144-61-8, 2-(N,N-Diphenylamino)-9,9-diethyl-9H-7-iodofluorene 308144-63-0, 2-(N,N-Diphenylamino)-9,9-dimethyl-9H-7-iodofluorene 308144-68-5, 2-[N-(4'-Methylphenyl)-N-phenylamino]-9,9-dimethyl-9H-7-iodofluorene 308814-66-6, 2-(N-Carbazolyl)-9,9-dimethyl-9H-7-iodofluorene 308814-67-7, 4-[N',N'-Di(3'-methylphenyl)amino]-N-phenylaniline 308814-68-8, 4-(N',N'-Diphenylamino)-N-phenyl-1-naphthylamine 308814-69-9, 6-(N',N'-Diphenylamino)-N-phenyl-2-naphthylamine 308814-70-2 308814-72-4, 2-(N,N-Diphenylamino)-9,9-

dimethyl-9H-7-(N'-phenylamino)fluorene 308814-73-5, 2-(N,N-Diphenylamino)-9,9-diethyl-9H-7-(N'-phenylamino)fluorene  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(in prepn. of diaminofluorene derivs. for hole transporters in org. electroluminescent devices)

L48 ANSWER 23 OF 39 CAPLUS COPYRIGHT 2003 ACS  
ACCESSION NUMBER: 2000:475912 CAPLUS  
DOCUMENT NUMBER: 133:96613  
TITLE: Organic electroluminescent device  
INVENTOR(S): Higashi, Hisahiro; Sakai, Toshio; Hosokawa, Chishio  
PATENT ASSIGNEE(S): Idemitsu Kosan Co., Ltd., Japan  
SOURCE: PCT Int. Appl., 68 pp.  
CODEN: PIXXD2  
DOCUMENT TYPE: Patent  
LANGUAGE: Japanese  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

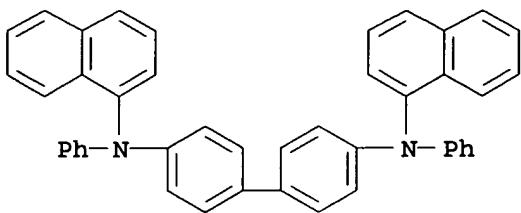
PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2000041443	A1	20000713	WO 1999-JP7201	19991222
W: CN, JP, KR, US				
RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
EP 1063869	A1	20001227	EP 1999-961303	19991222
R: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LI, LU, MC, NL, PT, SE				
JP 3290432	B2	20020610	JP 2000-593069	19991222
JP 2002175885	A2	20020621	JP 2001-304789	20011001
PRIORITY APPLN. INFO.:			JP 1998-373029 A	19981228
			JP 2000-593069 A3	19991222
			WO 1999-JP7201 W	19991222

AB The invention relates to an org. electroluminescent device having org. compd. layers which include an org. luminescent layer interposed between a pair of electrodes and at least one of which is made of an org. compd. material contg. <1000 ppm of impurities. The device is light wt. and flat and is applicable to a display of low-voltage drive type. The luminance does not deteriorate even after a long-term drive, and is excellent in durability.

IT 123847-85-8P, .alpha.-NPD 124729-98-2P, MTDATA  
RL: DEV (Device component use); SPN (Synthetic preparation);  
PREP (Preparation); USES (Uses)  
(org. electroluminescent device)

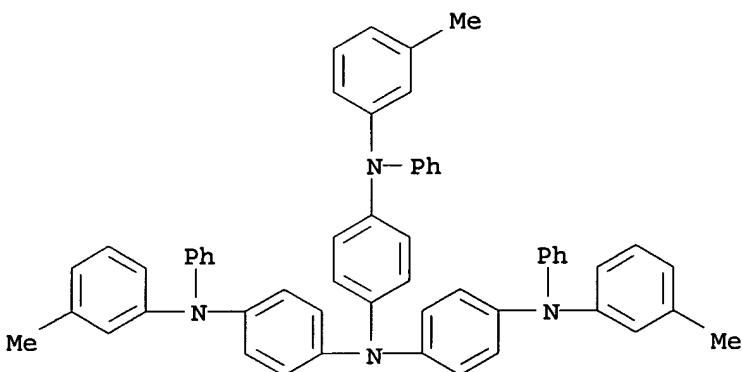
RN 123847-85-8 CAPLUS

CN [1,1'-Biphenyl]-4,4'-diamine, N,N'-di-1-naphthalenyl-N,N'-diphenyl- (9CI)  
(CA INDEX NAME)



RN 124729-98-2 CAPLUS

CN 1,4-Benzenediamine, N-(3-methylphenyl)-N'-bis[4-[(3-methylphenyl)phenylamino]phenyl]-N-phenyl- (9CI) (CA INDEX NAME)



IC ICM H05B033-14

ICS H05B033-22; C09K011-06

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

Section cross-reference(s): 74

ST org electroluminescence device purifn impurity HPLC

IT HPLC

(in relation to purifn. of org. substance used in electroluminescent device)

IT Purification

Recrystallization

Sublimation

(of org. substance used in electroluminescent device)

IT Electroluminescent devices

(org. electroluminescent device)

IT 2085-33-8, Al 8q

RL: DEV (Device component use); USES (Uses)

(org. electroluminescent device)

IT 1205-64-7P 4181-20-8P, 4,4',4'''-Triiodotriphenylamine

123847-85-8P, .alpha.-NPD 124729-98-2P, MTDATA

186412-15-7P 213527-39-0P

RL: DEV (Device component use); SPN (Synthetic preparation);

PREP (Preparation); USES (Uses)

(org. electroluminescent device)

IT 144810-08-2P

RL: MOA (Modifier or additive use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)

(org. electroluminescent device)

IT 90-14-2, 1-Iodonaphthalene 102-10-3 106-37-6, 1,4-Dibromobenzene

122-52-1, Triethyl phosphite 523-27-3, 9,10-Dibromoanthracene

531-91-9, N,N'-Diphenylbenzidine 776-74-9, Diphenylbromomethane

1122-91-4, p-Bromobenzaldehyde 4181-05-9

RL: RCT (Reactant); RACT (Reactant or reagent)

(org. electroluminescent device)

REFERENCE COUNT: 6 THERE ARE 6 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L48 ANSWER 24 OF 39 CAPLUS COPYRIGHT 2003 ACS

ACCESSION NUMBER: 2000:175881 CAPLUS

DOCUMENT NUMBER: 132:214645

TITLE: Organic electroluminescence device and phenylenediamine derivative

INVENTOR(S): Kawamura, Hisayuki; Hosokawa, Chishio

PATENT ASSIGNEE(S): Idemitsu Kosan Co., Ltd., Japan

SOURCE: PCT Int. Appl., 124 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2000014174	A1	20000316	WO 1999-JP4794	19990903
W: CN, KR, US				
RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
EP 1029909	A1	20000823	EP 1999-940653	19990903
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI				
JP 2000309566	A2	20001107	JP 1999-256280	19990909
US 6541129	B1	20030401	US 2000-530597	20000509
PRIORITY APPLN. INFO.:			JP 1998-255563 A	19980909
			JP 1999-47110 A	19990224
			WO 1999-JP4794 W	19990903

OTHER SOURCE(S): MARPAT 132:214645

AB An org. electroluminescence device having a low driving voltage and a long life and a material having a small ionization potential and providing a large hole mobility are disclosed. The org. electroluminescence device comprises an org. electroluminescent layer contg. a charge injection assisting material, and a hole transport region contg. a phenylenediamine deriv. expressed by a specific structural formula and having a hole mobility of 10-4 cm<sup>2</sup>/V.cntdot.s or more, the both layer being sandwiched between a pair of electrodes.

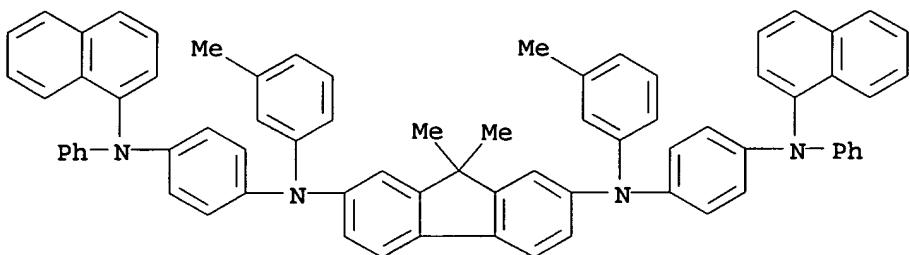
IT 260550-71-8 260550-92-3 260550-93-4

260550-94-5 260550-95-6 260550-96-7

RL: DEV (Device component use); USES (Uses)  
(org. electroluminescence device contg. phenylenediamine  
deriv.)

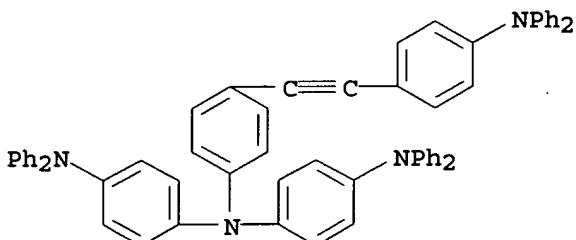
RN 260550-71-8 CAPLUS

CN 9H-Fluorene-2,7-diamine, 9,9-dimethyl-N,N'-bis(3-methylphenyl)-N,N'-bis[4-(1-naphthalenylphenylamino)phenyl]- (9CI) (CA INDEX NAME)



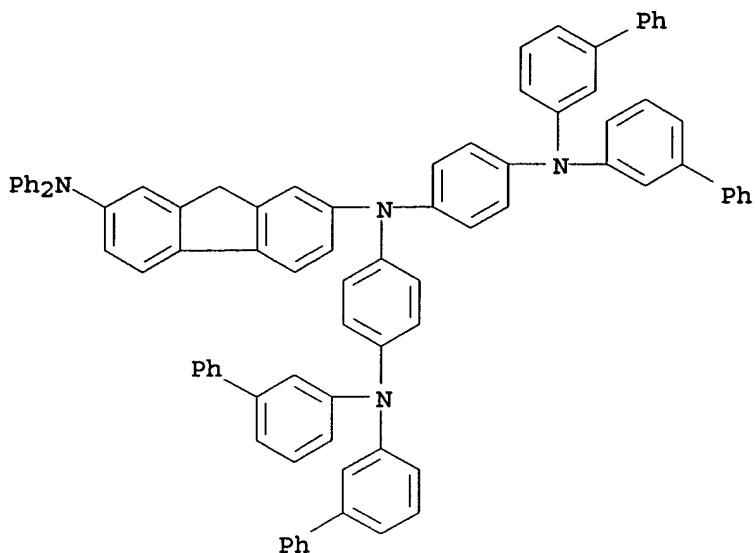
RN 260550-92-3 CAPLUS

CN 1,4-Benzenediamine, N-[4-(diphenylamino)phenyl]-N-[4-[(4-(diphenylamino)phenyl)ethynyl]phenyl]-N',N'-diphenyl- (9CI) (CA INDEX NAME)



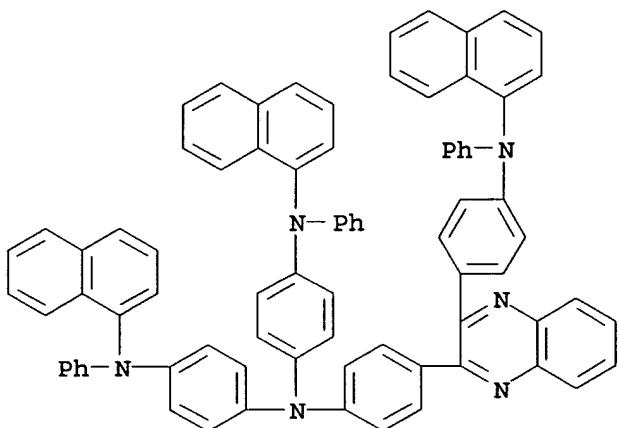
RN 260550-93-4 CAPLUS

CN 9H-Fluorene-2,7-diamine, N,N-bis[4-(bis[1,1'-biphenyl]-3-ylamino)phenyl]-N',N'-diphenyl- (9CI) (CA INDEX NAME)



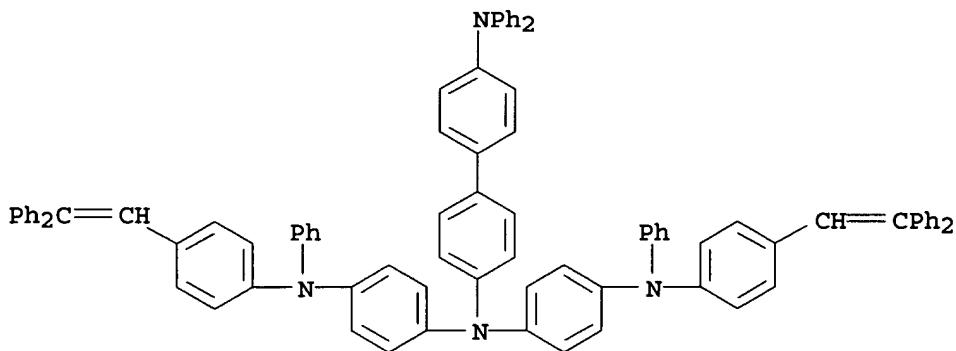
RN 260550-94-5 CAPLUS

CN 1,4-Benzenediamine, N-1-naphthalenyl-N'-[1-(1-naphthalenylphenylamino)phenyl]-N'-[4-[3-[4-(1-naphthalenylphenylamino)phenyl]-2-quinoxalinyphenyl]-N-phenyl- (9CI)  
(CA INDEX NAME)



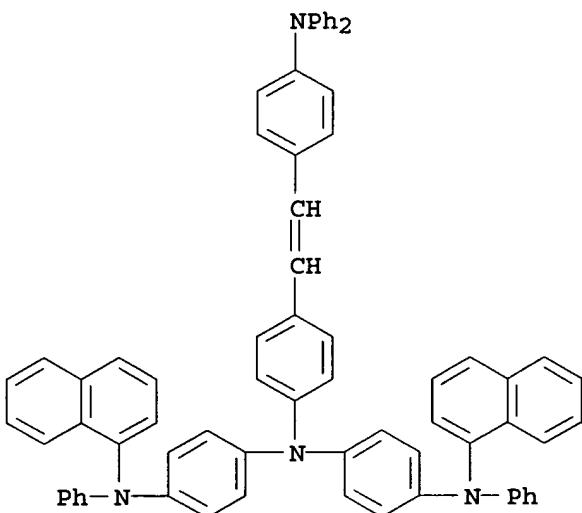
RN 260550-95-6 CAPLUS

CN [1,1'-Biphenyl]-4,4'-diamine, N,N-bis[4-[(4-(2,2-diphenylethenyl)phenyl)phenylamino]phenyl]-N',N'-diphenyl- (9CI) (CA INDEX NAME)



RN 260550-96-7 CAPLUS

CN 1,4-Benzenediamine, N-[4-[2-[4-(diphenylamino)phenyl]ethenyl]phenyl]-N'-1-naphthalenyl-N-[1-(1-naphthalenylphenylamino)phenyl]-N'-phenyl- (9CI) (CA INDEX NAME)

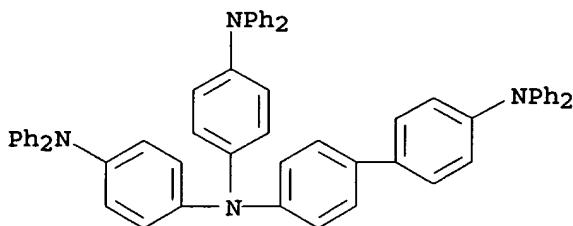


IT 260550-68-3P

RL: DEV (Device component use); SPN (Synthetic preparation);  
PREP (Preparation); USES (Uses)  
(org. electroluminescence device contg. phenylenediamine deriv.)

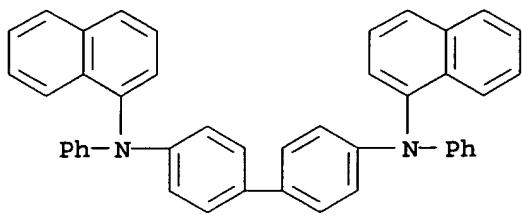
RN 260550-68-3 CAPLUS

CN [1,1'-Biphenyl]-4,4'-diamine, N,N-bis[4-(diphenylamino)phenyl]-N',N'-diphenyl- (9CI) (CA INDEX NAME)



IC ICM C09K011-06  
ICS H05B033-22; H05B033-14; C07C211-54; C07C211-58; C07D213-38;  
C07D239-26; C07D241-12; C07D249-08; C07D333-20; C07D209-44;  
C07D335-12; C07D307-52; C07D271-10; C07D207-335  
CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related  
Properties)  
Section cross-reference(s): 74  
ST org electroluminescence device phenylenediamine deriv  
IT Electroluminescent devices  
(org. electroluminescence device contg. phenylenediamine deriv.)  
IT 144810-08-2 172285-72-2 213527-39-0 260550-71-8  
260550-73-0 260550-74-1 260550-75-2 260550-77-4 260550-91-2  
260550-92-3 260550-93-4 260550-94-5  
260550-95-6 260550-96-7 260550-97-8  
RL: DEV (Device component use); USES (Uses)  
(org. electroluminescence device contg. phenylenediamine  
deriv.)  
IT 260550-52-5P 260550-54-7P 260550-57-0P 260550-59-2P 260550-65-0P  
260550-68-3P  
RL: DEV (Device component use); SPN (Synthetic preparation);  
PREP (Preparation); USES (Uses)  
(org. electroluminescence device contg. phenylenediamine  
deriv.)  
IT 90-14-2, 1-Iodonaphthalene 90-30-2 92-52-4, Biphenyl, reactions  
101-77-9 101-80-4 350-46-9, p-Fluoronitrobenzene 531-91-9  
603-34-9, Triphenyl amine 1205-64-7, (3-Methyl)diphenylamine  
1333-74-0, Hydrogen, reactions 3365-85-3, 4,4''-Diamino-p-terphenyl  
7553-56-2, Iodine, reactions 7681-11-0, Potassium iodide, reactions  
106704-35-2 260550-53-6  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(org. electroluminescence device contg. phenylenediamine deriv.)  
IT 29170-08-9P 38257-52-2P, 4-Iodotriphenylamine 62984-61-6P  
138310-85-7P 201802-13-3P 260550-51-4P 260550-55-8P 260550-58-1P  
260550-61-6P  
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT  
(Reactant or reagent)  
(org. electroluminescence device contg. phenylenediamine deriv.)  
REFERENCE COUNT: 12 THERE ARE 12 CITED REFERENCES AVAILABLE FOR THIS  
RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

DOCUMENT NUMBER: 132:286052  
TITLE: Hole-transporting polyimide for organic electroluminescent display  
AUTHOR(S): Kim, Y.; Lee, J.-G.; Han, K.; Hwang, H.-K.; Choi, D.-K.; Jung, Y.-Y.; Keum, J.-H.; Kim, S.; Park, S.-S.; Im, W.-B.  
CORPORATE SOURCE: Display Technology Center, Institute for Advanced Engineering, Kyounggi-Do, S. Korea  
SOURCE: Thin Solid Films (2000), 363(1,2), 263-267  
CODEN: THSFAP; ISSN: 0040-6090  
PUBLISHER: Elsevier Science S.A.  
DOCUMENT TYPE: Journal  
LANGUAGE: English  
AB The thermal stability of newly synthesized hole-transporting polyimide, poly[N,N'-diphenyl-N,N'-bis(4-aminobiphenyl)-(1,1'-biphenyl)-4,4'-diamine pyromellitimide] (PMDA-DBABBD PI), via vapor deposition polymn. was studied with the aid of the capacitance-temp. (C-T) measurement technique. Prior to the examn. of the complete org. electroluminescent device (OELD), the single layer devices with the individual materials including tris(8-hydroxyquinolinato) Al (Alq3), N,N'-diphenyl-N,N'-bis(3-methylphenyl)-(1,1'-biphenyl)-4,4'-diamine (TPD), N,N'-diphenyl-N,N'-bis(1-naphthyl)-(1,1'-biphenyl)-4,4'-diamine (NPB), Cu phthalocyanine (CuPc), and PMDA-DBABBD PI were subjected to the C-T measurement. The relaxation temps. of the single layer devices with Alq3, TPD, NPB, CuPc, and PMDA-DBABBD PI were 180, 76, 110, 125, and >200.degree., resp. The OELD with PMDA-DBABBD PI and Alq3 as a hole-transporting layer and emissive layer was not relaxed up to 150.degree., while those contg. CuPc/TPD and NPB thin films were catastrophically damaged at .apprx.76 and 110.degree., resp. The OELD with the small org. hole-transporting mol. has almost the same relaxation temp. as the single layer device with the resp. mols. The rectifying and electroluminescent characteristics disappeared for the annealed OELD with the small org. hole-transporting mols., whereas the OELD with the hole-transporting polyimide did still show the rectifying behavior with the green light emission even though the c.d. and the light intensity became largely reduced.  
IT 123847-85-8P, NPB (photoreceptor)  
RL: DEV (Device component use); PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)  
(NPB; hole-transporting polyimide for org. electroluminescent display)  
RN 123847-85-8 CAPLUS  
CN [1,1'-Biphenyl]-4,4'-diamine, N,N'-di-1-naphthalenyl-N,N'-diphenyl- (9CI)  
(CA INDEX NAME)



CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)  
Section cross-reference(s): 76  
ST hole transport polyimide electroluminescent device capacitance dielec loss  
IT Dielectric loss  
Electric capacitance  
Electroluminescent devices  
Hole transport  
(hole-transporting polyimide for org. electroluminescent display)  
IT Polyimides, properties  
RL: DEV (Device component use); PRP (Properties); USES (Uses)  
(hole-transporting polyimide for org. electroluminescent display)  
IT Polymerization  
(vapor-deposition; hole-transporting polyimide for org.  
electroluminescent display)  
IT 2085-33-8, Aluminum tris(8-hydroxyquinolinate)  
RL: DEV (Device component use); PRP (Properties); USES (Uses)  
(Alq<sub>3</sub>; hole-transporting polyimide for org. electroluminescent display)  
IT 147-14-8, Copper phthalocyanine  
RL: DEV (Device component use); PRP (Properties); USES (Uses)  
(CuPc; hole-transporting polyimide for org. electroluminescent display)  
IT 123847-85-8P, NPB (photoreceptor)  
RL: DEV (Device component use); PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)  
(NPB; hole-transporting polyimide for org. electroluminescent display)  
IT 65181-78-4, TPD  
RL: DEV (Device component use); PRP (Properties); USES (Uses)  
(hole-transporting polyimide for org. electroluminescent display)  
IT 263875-23-6P  
RL: DEV (Device component use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)  
(hole-transporting polyimide for org. electroluminescent display)  
IT 89-32-7 90-14-2, 1-Iodonaphthalene 531-91-9, N, N'-Diphenylbenzidine  
6242-98-4, 4-Bromo-4'-nitrobiphenyl  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(hole-transporting polyimide for org. electroluminescent display)  
IT 263875-20-3P 263875-21-4P 263875-22-5P  
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)  
(hole-transporting polyimide for org. electroluminescent display)

REFERENCE COUNT: 31 THERE ARE 31 CITED REFERENCES AVAILABLE FOR THIS

## RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L48 ANSWER 26 OF 39 CAPLUS COPYRIGHT 2003 ACS  
 ACCESSION NUMBER: 1999:672937 CAPLUS  
 DOCUMENT NUMBER: 131:305016  
 TITLE: Organic electroluminescent device  
 INVENTOR(S): Higashi, Hisahiro; Hosokawa, Chishio  
 PATENT ASSIGNEE(S): Idemitsu Kosan Co., Ltd., Japan  
 SOURCE: PCT Int. Appl., 51 pp.  
 CODEN: PIXXD2  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9952992	A1	19991021	WO 1999-JP1873	19990408
W: CN, JP, KR, US				
RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
EP 992564	A1	20000412	EP 1999-913588	19990408
R: DE, FR, GB				
US 6406804	B1	20020618	US 2000-424870	20000201
US 2002136924	A1	20020926	US 2002-78666	20020221
PRIORITY APPLN. INFO.:			JP 1998-98013	A 19980409
			WO 1999-JP1873	W 19990408
			US 2000-424870	A1 20000201

OTHER SOURCE(S): MARPAT 131:305016

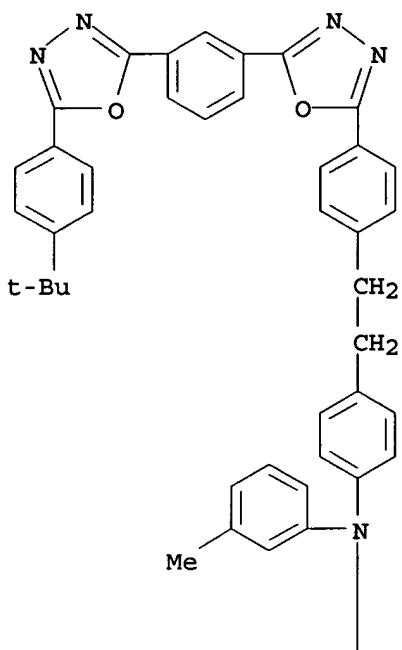
AB A durable, high-luminance, org. electroluminescent device, which is easy to manuf., has a luminescent layer between 2 electrodes. The luminescent layer contains a compd. having a mol. structure in which electron carrier units and hole carrier units are coupled by bonding groups.

IT 247019-78-9P  
 RL: DEV (Device component use); SPN (Synthetic preparation);  
 PREP (Preparation); USES (Uses)  
 (in fabrication of org. electroluminescent device)

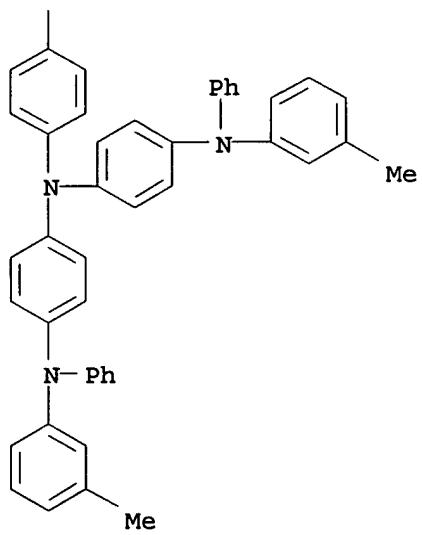
RN 247019-78-9 CAPLUS

CN 1,4-Benzenediamine, N-[4-[[4-[2-[4-[5-[3-[5-[4-(1,1-dimethylethyl)phenyl]-1,3,4-oxadiazol-2-yl]phenyl]-1,3,4-oxadiazol-2-yl]phenyl]ethyl]phenyl](3-methylphenyl)amino]phenyl]-N'-(3-methylphenyl)-N-[4-[(3-methylphenyl)phenylamino]phenyl]-N'-phenyl- (9CI) (CA INDEX NAME)

PAGE 1-A



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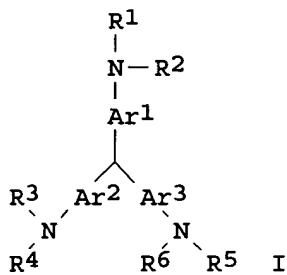
IC ICM C09K011-06  
ICS H05B033-14

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

Section cross-reference(s): 25, 74  
ST org electroluminescent device  
IT Electroluminescent devices  
(org.)  
IT 247019-26-7P 247019-53-0P 247019-58-5P 247019-75-6P  
247019-78-9P 247019-98-3P 247021-68-7P 247024-67-5P  
247024-68-6P 247024-69-7P 247024-70-0P  
RL: DEV (Device component use); SPN (Synthetic preparation);  
PREP (Preparation); USES (Uses)  
(in fabrication of org. electroluminescent device)  
IT 350-46-9, p-Fluoronitrobenzene 531-91-9, N,N'-Diphenylbenzidine  
625-95-6, m-Iodotoluene 15082-28-7 128833-03-4 247019-30-3  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(in fabrication of org. electroluminescent device)  
IT 20441-08-1P 155557-65-6P 184104-81-2P 184845-52-1P 199122-02-6P  
199122-04-8P 247019-24-5P 247019-25-6P  
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT  
(Reactant or reagent)  
(in fabrication of org. electroluminescent device)  
REFERENCE COUNT: 9 THERE ARE 9 CITED REFERENCES AVAILABLE FOR THIS  
RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L48 ANSWER 27 OF 39 CAPLUS COPYRIGHT 2003 ACS  
ACCESSION NUMBER: 1999:670067 CAPLUS  
DOCUMENT NUMBER: 131:294207  
TITLE: Hole-transporting material and use thereof  
INVENTOR(S): Tamano, Michiko; Okutsu, Satoshi; Enokida, Toshio  
PATENT ASSIGNEE(S): Toyo Ink Manufacturing Co., Ltd., Japan  
SOURCE: U.S., 22 pp., Cont.-in-part of U.S. Ser. No. 762,921,  
abandoned.  
CODEN: USXXAM  
DOCUMENT TYPE: Patent  
LANGUAGE: English  
FAMILY ACC. NUM. COUNT: 2  
PATENT INFORMATION:

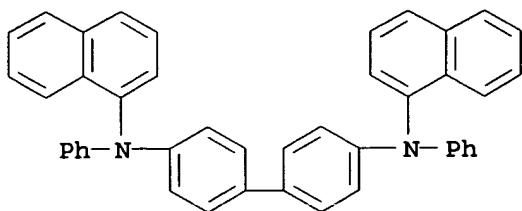
PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 5968675	A	19991019	US 1998-85251	19980528
JP 09222741	A2	19970826	JP 1996-306049	19961118
PRIORITY APPLN. INFO.:			JP 1995-321345	A 19951211
			JP 1996-306049	A 19961118
			US 1996-762921	B2 19961210
OTHER SOURCE(S):	MARPAT	131:294207		
GI				



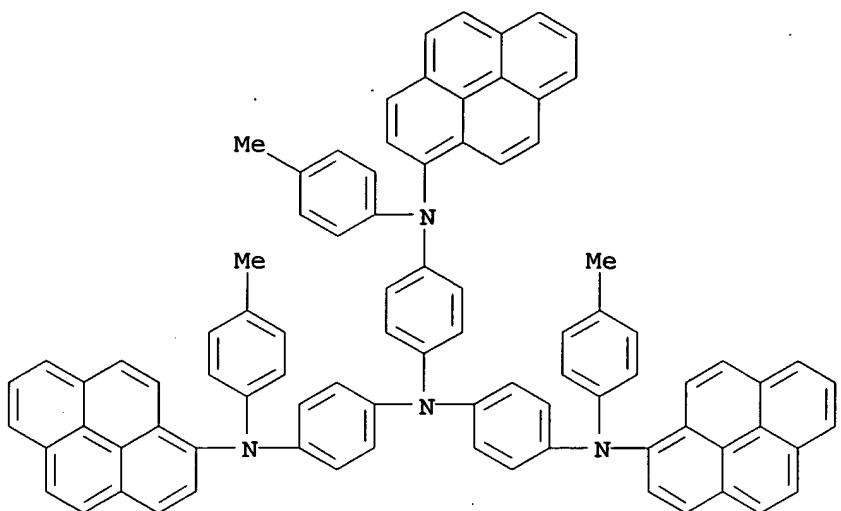
AB Hole-transporting materials are described by the general formula I ( $\text{R}1-6 =$  independently selected (un)substituted aryl groups, .gtoreq.1 of which is an aryl group having a cycloalkyl ring or .gtoreq.1 of which comprises fused arom. rings having .gtoreq.3 fused rings; and each of  $\text{Ar}1-3 =$  independently selected (un)substituted arylene groups). Org. electroluminescent devices and electrophotog. photoreceptors employing the materials are also described.

IT 123847-85-8, 4,4'-Bis[N-(1-naphthyl)-N-phenylamino]biphenyl  
 192180-93-1 192180-96-4 192181-01-4  
 192181-02-5 192181-04-7 192181-05-8  
 192181-06-9 192181-09-2 192181-10-5  
 192181-12-7 192181-16-1 192181-18-3  
 246874-93-1 246874-94-2 246874-95-3  
 246874-96-4 246874-97-5 246874-98-6  
 RL: DEV (Device component use); USES (Uses)  
 (hole-transporting materials based on triarylamine derivs. and their use in electroluminescent devices and electrophotog. photoreceptors)

RN 123847-85-8 CAPLUS  
 CN [1,1'-Biphenyl]-4,4'-diamine, N,N'-di-1-naphthalenyl-N,N'-diphenyl- (9CI)  
 (CA INDEX NAME)

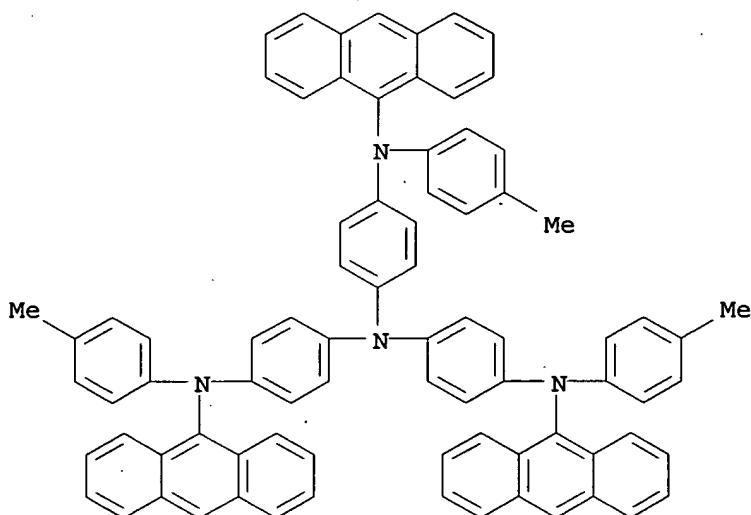


RN 192180-93-1 CAPLUS  
 CN 1,4-Benzenediamine, N-(4-methylphenyl)-N',N'-bis[4-[(4-methylphenyl)-1-pyrenylamino]phenyl]-N-1-pyrenyl- (9CI) (CA INDEX NAME)



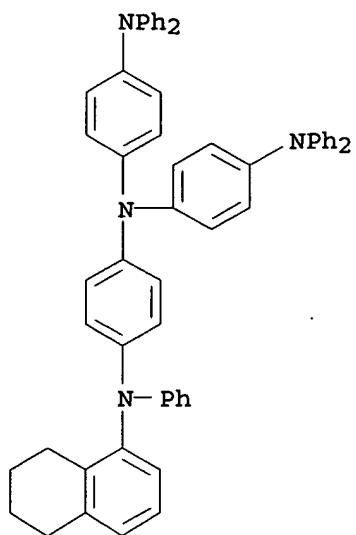
RN 192180-96-4 CAPLUS

CN 1,4-Benzenediamine, N-9-anthracenyl-N'-bis[4-[9-anthracenyl(4-methylphenyl)amino]phenyl]-N-(4-methylphenyl)- (9CI) (CA INDEX NAME)



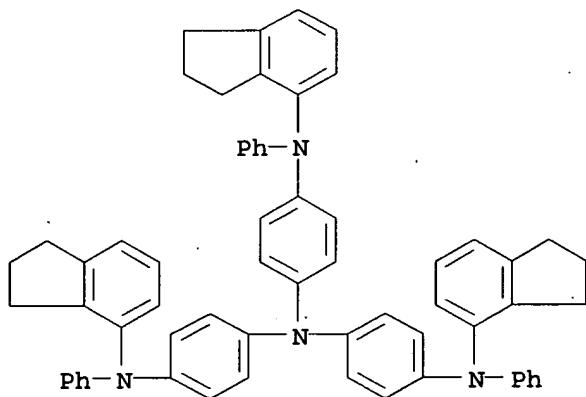
RN 192181-01-4 CAPLUS

CN 1,4-Benzenediamine, N,N'-bis[4-(diphenylamino)phenyl]-N'-phenyl-N'-(5,6,7,8-tetrahydro-1-naphthalenyl)- (9CI) (CA INDEX NAME)



RN 192181-02-5 CAPLUS

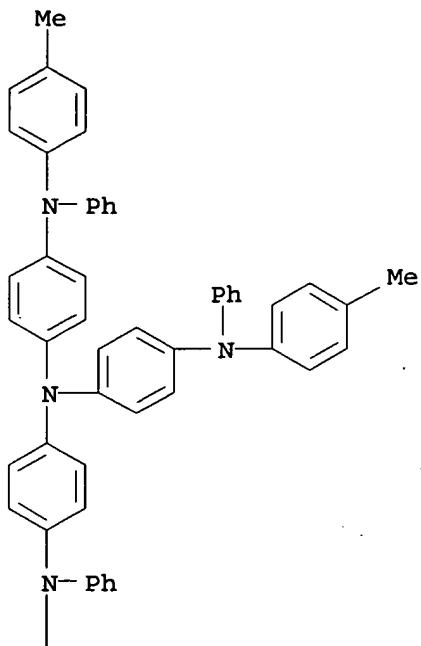
CN 1,4-Benzenediamine, N-(2,3-dihydro-1H-inden-4-yl)-N'-(4-[(2,3-dihydro-1H-inden-4-yl)phenylamino]phenyl)-N-phenyl- (9CI) (CA INDEX NAME)



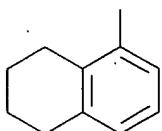
RN 192181-04-7 CAPLUS

CN 1,4-Benzenediamine, N,N-bis[4-[(4-methylphenyl)phenylamino]phenyl]-N'-phenyl-N'-(5,6,7,8-tetrahydro-1-naphthalenyl)- (9CI) (CA INDEX NAME)

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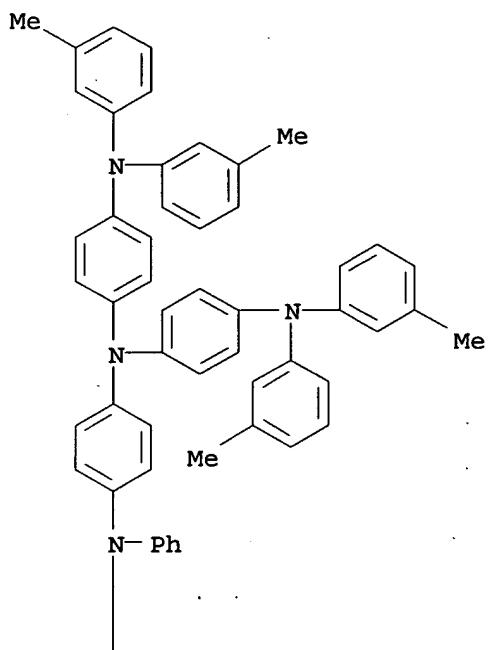
PAGE 2-A



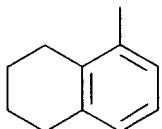
RN 192181-05-8 CAPLUS

CN 1,4-Benzenediamine, N,N-bis[4-[bis(3-methylphenyl)amino]phenyl]-N'-phenyl-N'-(5,6,7,8-tetrahydro-1-naphthalenyl)- (9CI) (CA INDEX NAME)

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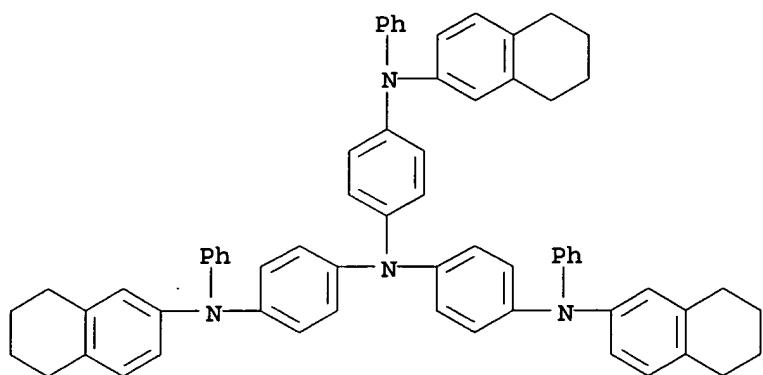


PAGE 2-A



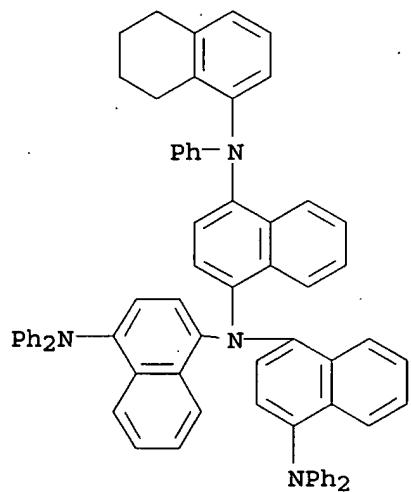
RN 192181-06-9 CAPLUS

CN 1,4-Benzenediamine, N-phenyl-N'-N'-bis[4-[phenyl(5,6,7,8-tetrahydro-2-naphthalenyl)amino]phenyl]-N-(5,6,7,8-tetrahydro-2-naphthalenyl)- (9CI)  
(CA INDEX NAME)



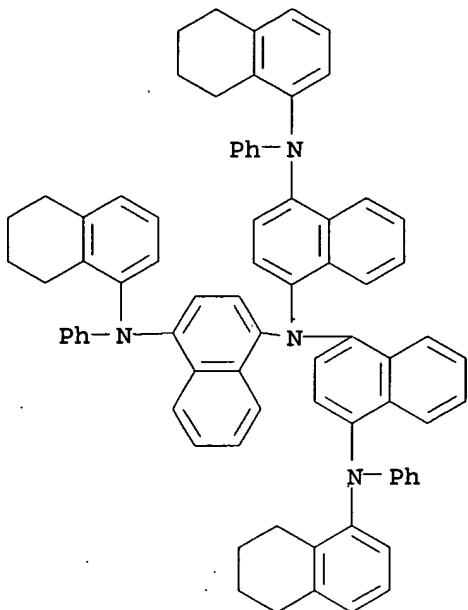
RN 192181-09-2 CAPLUS

CN 1,4-Naphthalenediamine, N,N-bis[4-(diphenylamino)-1-naphthalenyl]-N'-phenyl-N'-(5,6,7,8-tetrahydro-1-naphthalenyl)-(9CI) (CA INDEX NAME)



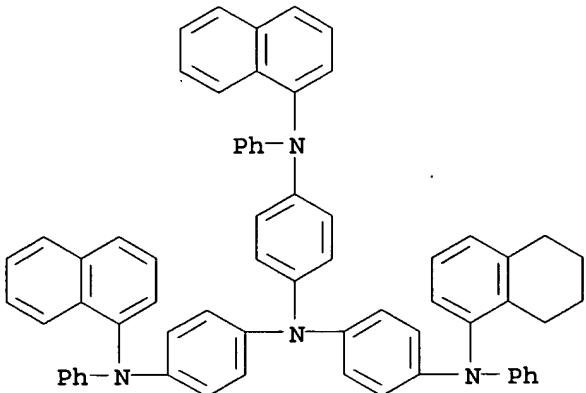
RN 192181-10-5 CAPLUS

CN 1,4-Naphthalenediamine, N-phenyl-N',N'-bis[4-[phenyl(5,6,7,8-tetrahydro-1-naphthalenyl)amino]-1-naphthalenyl]-N-(5,6,7,8-tetrahydro-1-naphthalenyl)-(9CI) (CA INDEX NAME)



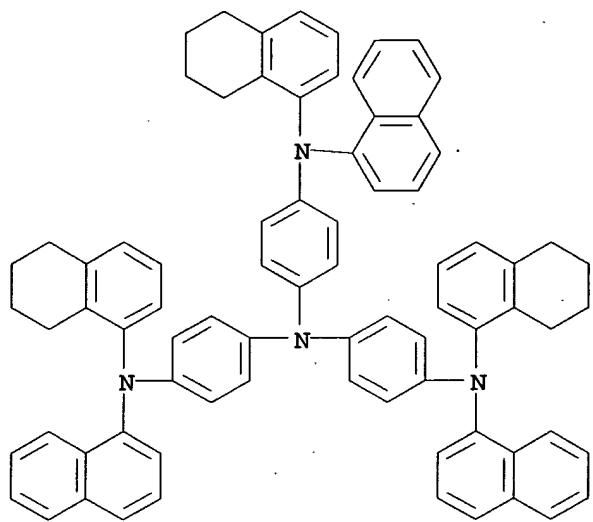
RN 192181-12-7 CAPLUS

CN 1,4-Benzenediamine, N,N-bis[4-(1-naphthalenylphenylamino)phenyl]-N'-phenyl-N'-(5,6,7,8-tetrahydro-1-naphthalenyl)- (9CI) (CA INDEX NAME)



RN 192181-16-1 CAPLUS

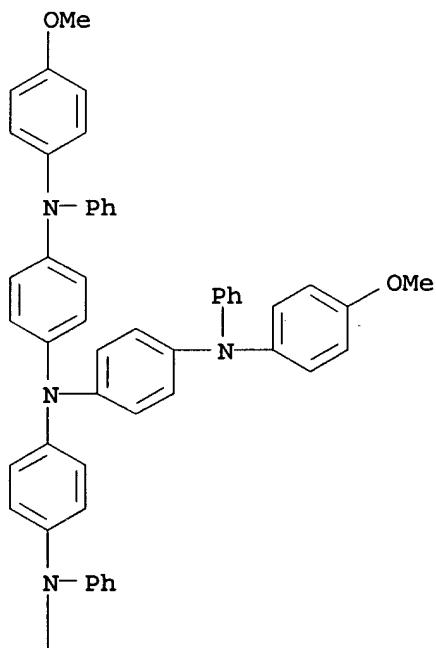
CN 1,4-Benzenediamine, N-1-naphthalenyl-N',N'-bis[4-[1-naphthalenyl(5,6,7,8-tetrahydro-1-naphthalenyl)amino]phenyl]-N-(5,6,7,8-tetrahydro-1-naphthalenyl)- (9CI) (CA INDEX NAME)



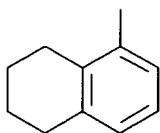
RN 192181-18-3 CAPLUS

CN 1,4-Benzenediamine, N,N-bis[4-[(4-methoxyphenyl)phenylamino]phenyl]-N'-phenyl-N'-(5,6,7,8-tetrahydro-1-naphthalenyl)- (9CI) (CA INDEX NAME)

PAGE 1-A

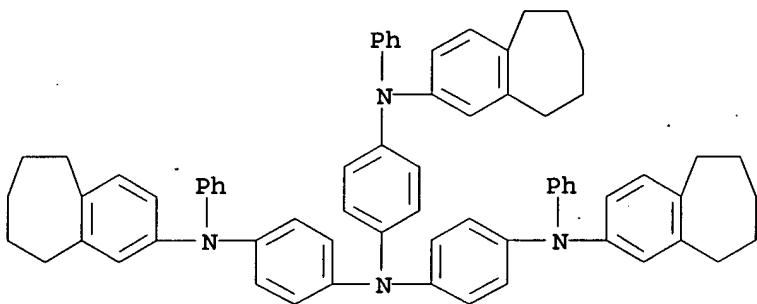


PAGE 2-A



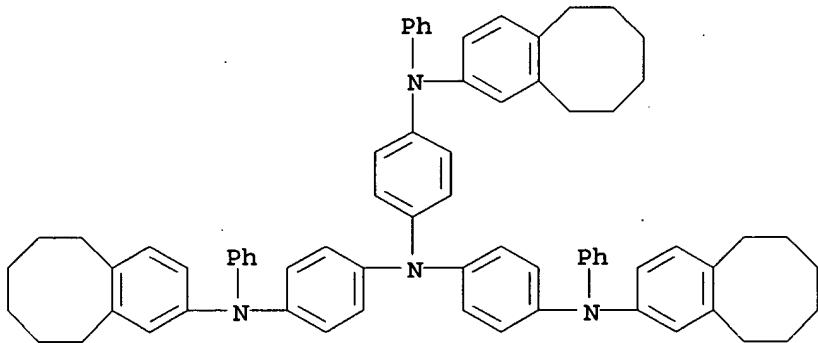
RN 246874-93-1 CAPLUS

CN 1,4-Benzenediamine, N-phenyl-N'-bis[4-[phenyl(6,7,8,9-tetrahydro-5H-benzocyclohepten-2-yl)amino]phenyl]-N-(6,7,8,9-tetrahydro-5H-benzocyclohepten-2-yl)- (9CI) (CA INDEX NAME)



RN 246874-94-2 CAPLUS

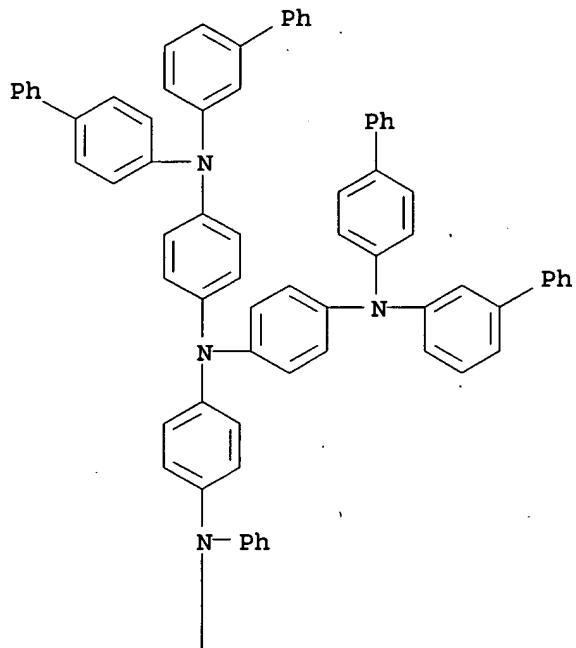
CN 1,4-Benzenediamine, N-(5,6,7,8,9,10-hexahydro-2-benzocyclooctenyl)-N'-(1-[(5,6,7,8,9,10-hexahydro-2-benzocyclooctenyl)phenylamino]phenyl)-N'-(4-[(5,6,7,8,9,10-hexahydro-2-benzocyclooctenyl)phenylamino]phenyl)-N-phenyl- (9CI) (CA INDEX NAME)



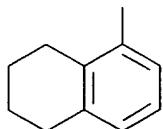
RN 246874-95-3 CAPLUS

CN 1,4-Benzenediamine, N-[1,1'-biphenyl]-3-yl-N-[1,1'-biphenyl]-4-yl-N'-(4-[(1,1'-biphenyl)-3-yl[1,1'-biphenyl]-4-ylamino]phenyl)-N'-(4-[(phenyl(5,6,7,8-tetrahydro-1-naphthalenyl)amino]phenyl)- (9CI) (CA INDEX NAME)

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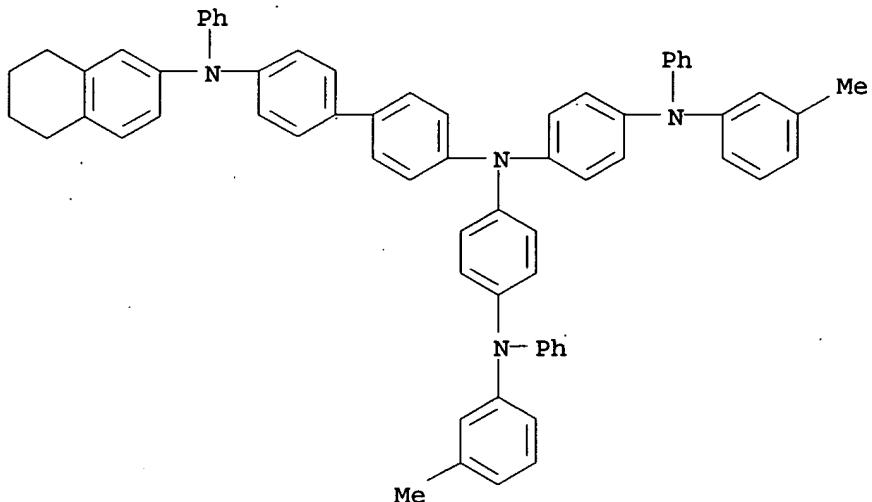


PAGE 2-A



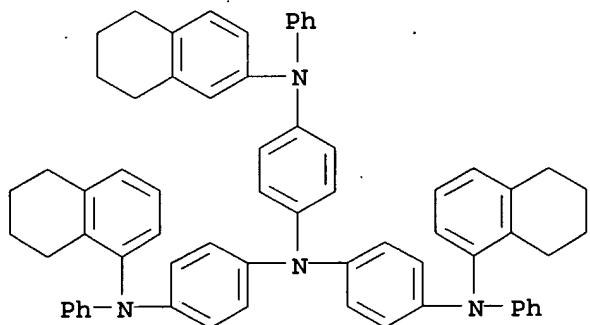
RN 246874-96-4 CAPLUS

CN [1,1'-Biphenyl]-4,4'-diamine, N,N-bis[4-[(3-methylphenyl)phenylamino]phenyl]-N'-phenyl-N'-(5,6,7,8-tetrahydro-2-naphthalenyl)- (9CI) (CA INDEX NAME)



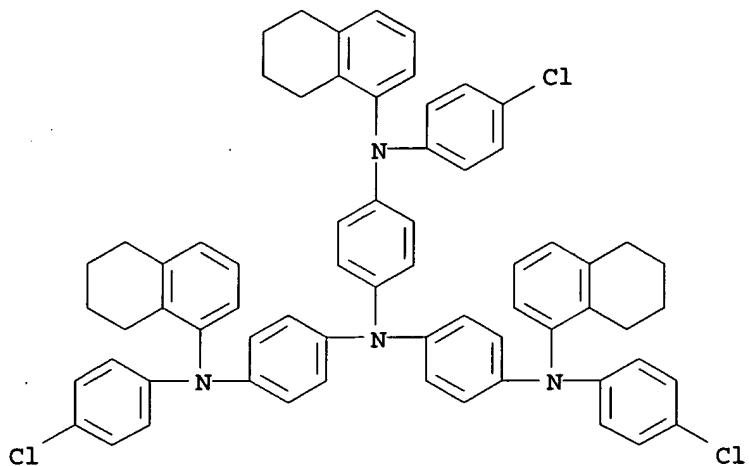
RN 246874-97-5 CAPLUS

CN 1,4-Benzenediamine, N-phenyl-N'-bis[4-[phenyl(5,6,7,8-tetrahydro-1-naphthalenyl)amino]phenyl]-N-(5,6,7,8-tetrahydro-2-naphthalenyl)- (9CI)  
(CA INDEX NAME)



RN 246874-98-6 CAPLUS

CN 1,4-Benzenediamine, N-(4-chlorophenyl)-N'-(1-[(4-chlorophenyl)(5,6,7,8-tetrahydro-1-naphthalenyl)amino]phenyl)-N'-(4-[(4-chlorophenyl)(5,6,7,8-tetrahydro-1-naphthalenyl)amino]phenyl)-N-(5,6,7,8-tetrahydro-1-naphthalenyl)- (9CI) (CA INDEX NAME)



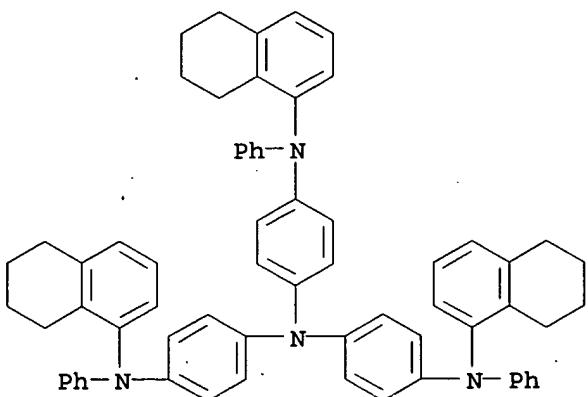
IT 192181-03-6P

RL: DEV (Device component use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)

(hole-transporting materials based on triarylamine derivs. and their use in electroluminescent devices and electrophotog. photoreceptors)

RN 192181-03-6 CAPLUS

CN 1,4-Benzenediamine, N-phenyl-N',N'-bis[4-[phenyl(5,6,7,8-tetrahydro-1-naphthalenyl)amino]phenyl]-N-(5,6,7,8-tetrahydro-1-naphthalenyl)- (9CI)  
(CA INDEX NAME)



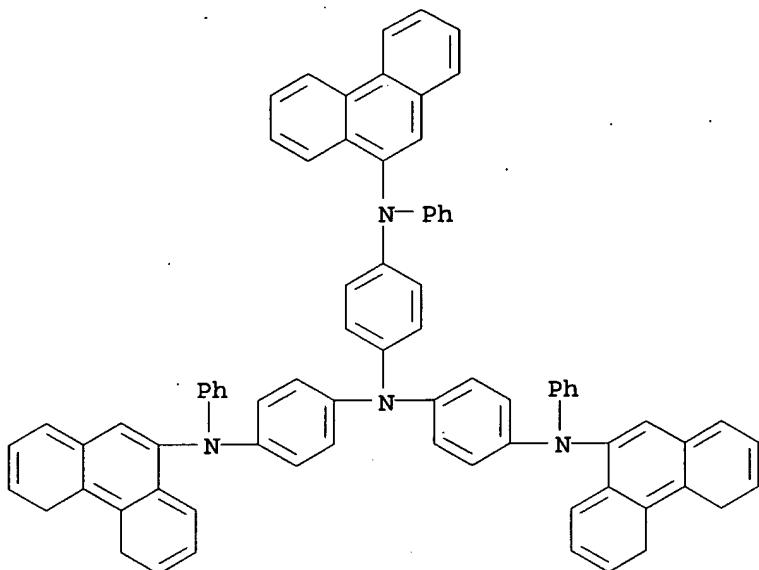
IT 246874-92-0P

RL: DEV (Device component use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)

(hole-transporting materials based on triarylamine derivs. and their use in electroluminescent devices and electrophotog. photoreceptors)

RN 246874-92-0 CAPLUS

CN 1,4-Benzenediamine, N,N-bis[4-[(4,5-dihydro-9-phenanthrenyl)phenylamino]phenyl]-N'-9-phenanthrenyl-N'-phenyl- (9CI) (CA INDEX NAME)



IC ICM H05B033-14

NCL 428690000

CC 76-2 (Electric Phenomena)

Section cross-reference(s): 73, 74

ST triaryl amine deriv hole transporting material; electroluminescent device  
triaryl amine deriv hole transporting material; electrophotog  
photoreceptor triaryl amine deriv hole transporting material

IT Electroluminescent devices

Electrophotographic photoconductors (photoreceptors)

(hole-transporting materials based on triarylamine derivs. and their  
use in electroluminescent devices and electrophotog. photoreceptors)

IT Polyvinyl butyral

RL: DEV (Device component use); USES (Uses)

(hole-transporting materials based on triarylamine derivs. and their  
use in electroluminescent devices and electrophotog. photoreceptors)

IT Electric conductors

(hole; hole-transporting materials based on triarylamine derivs. and  
their use in electroluminescent devices and electrophotog.  
photoreceptors)

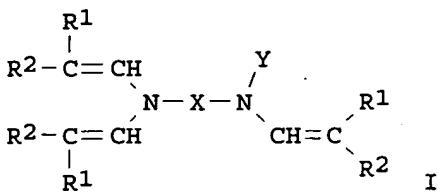
IT 147-14-8, Copper phthalocyanine 2085-33-8, Tris(8-hydroxyquinoline)aluminum 28259-80-5, Dibromoanthanthrone 37337-82-9, Vylon 200 83749-52-4 123847-85-8, 4,4'-Bis[N-(1-naphthyl)-N-phenylamino]biphenyl 179550-45-9 188049-36-7 192180-93-1 192180-96-4 192181-01-4 192181-02-5 192181-04-7 192181-05-8 192181-06-9 192181-09-2 192181-10-5 192181-12-7 192181-14-9 192181-16-1 192181-18-3

246874-93-1 246874-94-2 246874-95-3  
246874-96-4 246874-97-5 246874-98-6  
RL: DEV (Device component use); USES (Uses)  
(hole-transporting materials based on triarylamine derivs. and their  
use in **electroluminescent** devices and **electrophotog.**  
**photoreceptors**)  
IT 192181-03-6P  
RL: DEV (Device component use); PRP (Properties); SPN (Synthetic  
preparation); PREP (Preparation); USES (Uses)  
(hole-transporting materials based on triarylamine derivs. and their  
use in **electroluminescent** devices and **electrophotog.**  
**photoreceptors**)  
IT 246874-92-0P  
RL: DEV (Device component use); SPN (Synthetic preparation);  
PREP (Preparation); USES (Uses)  
(hole-transporting materials based on triarylamine derivs. and their  
use in **electroluminescent** devices and **electrophotog.**  
**photoreceptors**)  
IT 62-53-3, Benzenamine, reactions 80-73-9, 1,3-Dimethyl-2-imidazolidinone  
108-86-1, Bromobenzene, reactions 573-17-1, 9-Bromophenanthrene  
2217-41-6, 5,6,7,8-Tetrahydro-1-naphthylamine 4316-58-9,  
Tris(p-bromophenyl)amine  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(hole-transporting materials based on triarylamine derivs. and their  
use in **electroluminescent** devices and **electrophotog.** photoreceptors)  
IT 3920-79-4P 78440-75-2P  
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT  
(Reactant or reagent)  
(hole-transporting materials based on triarylamine derivs. and their  
use in **electroluminescent** devices and **electrophotog.** photoreceptors)  
REFERENCE COUNT: 8 THERE ARE 8 CITED REFERENCES AVAILABLE FOR THIS  
RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L48 ANSWER 28 OF 39 CAPLUS COPYRIGHT 2003 ACS  
ACCESSION NUMBER: 1999:603458 CAPLUS  
DOCUMENT NUMBER: 131:235834  
TITLE: Substituted diamine compound for organic  
electroluminescence device  
INVENTOR(S): Enomoto, Kazuhiro; Ogura, Takashi  
PATENT ASSIGNEE(S): Sharp Corp., Japan  
SOURCE: Jpn. Kokai Tokkyo Koho, 16 pp.  
CODEN: JKXXAF  
DOCUMENT TYPE: Patent  
LANGUAGE: Japanese  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 11255716	A2	19990921	JP 1998-58281	19980310
PRIORITY APPLN. INFO.:			JP 1998-58281	19980310
OTHER SOURCE(S):		MARPAT 131:235834		

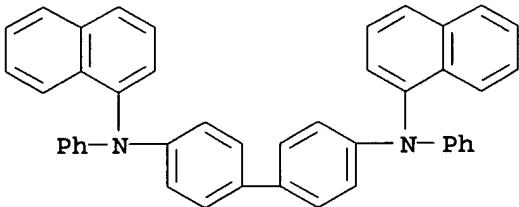
GI



AB The substituted diamine compd. for org. electroluminescence (EL) device has structure I (Y = C<sub>6</sub>-12 aryl, C<sub>1</sub>-4 alkyl, C<sub>7</sub>-14 aralkyl; X = C<sub>6</sub>-12 arylene, C<sub>2</sub>-6 alkylene; R<sub>1-2</sub> = H, C<sub>1</sub>-4 alkyl, C<sub>6</sub>-12 aryl, etc.). The diamine compd. provides the high luminescent efficiency and brightness.

IT 123847-85-8P  
RL: PNU (Preparation, unclassified); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)  
(substituted diamine compd. for org. electroluminescence device)

RN 123847-85-8 CAPLUS  
CN [1,1'-Biphenyl]-4,4'-diamine, N,N'-di-1-naphthalenyl-N,N'-diphenyl- (9CI)  
(CA INDEX NAME)



IC ICM C07C211-54  
ICS C09K011-06; G03G005-06; H05B033-14; H05B033-22  
CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)  
Section cross-reference(s): 73  
ST diamine org electroluminescence device  
IT Amines, preparation  
RL: PNU (Preparation, unclassified); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)  
(diamines; substituted diamine compd. for org. electroluminescence device)  
IT Electroluminescent devices  
(substituted diamine compd. for org. electroluminescence device)  
IT 65181-78-4P 123847-85-8P 145024-29-9P 244032-80-2P  
244032-81-3P 244032-82-4P 244032-83-5P 244032-84-6P 244032-85-7P  
244032-86-8P 244032-87-9P 244032-88-0P 244032-89-1P 244032-90-4P  
244032-91-5P

RL: PNU (Preparation, unclassified); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)  
(substituted diamine compd. for org. electroluminescence device)

IT 101-54-2, p-Aminodiphenylamine 1210-05-5, Diphenaldehyde 18278-24-5,  
1-Formyl-1,2,3,4-tetrahydronaphthalene  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(substituted diamine compd. for org. electroluminescence device)

L48 ANSWER 29 OF 39 CAPLUS COPYRIGHT 2003 ACS

ACCESSION NUMBER: 1999:341108 CAPLUS

DOCUMENT NUMBER: 131:51819

TITLE: Organic electroluminescent device containing perylene compound

INVENTOR(S): Higashiguchi, Itaru; Oda, Atsushi; Suzuki, Toshiyasu;  
Tanaka, Taizo

PATENT ASSIGNEE(S): NEC Corp., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 26 pp.

CODEN: JKXXAF

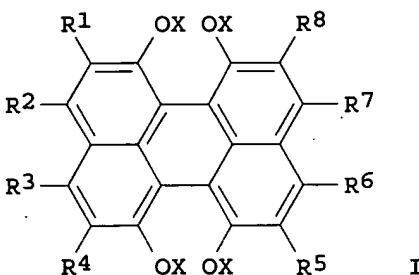
DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 11144870	A2	19990528	JP 1997-304207	19971106
JP 3104223	B2	20001030		
PRIORITY APPLN. INFO.:			JP 1997-304207	19971106
OTHER SOURCE(S):		MARPAT 131:51819		
GI				



AB The device has a cathode and an anode sandwiching a light-emitting layer-contg. org. thin film layer contg. a perylene compd. I (R1-8 = H, halogen, OH, NH<sub>2</sub>, NO<sub>2</sub>, cyano, alkyl, alkenyl, cycloalkyl, alkoxy, arom. hydrocarbon, arom. heterocyclic, aralkyl, aryloxy, alkoxy carbonyl, CO<sub>2</sub>H; R1-R8 may bond to form a ring; X = alkyl, alkenyl, cycloalkyl, arom.

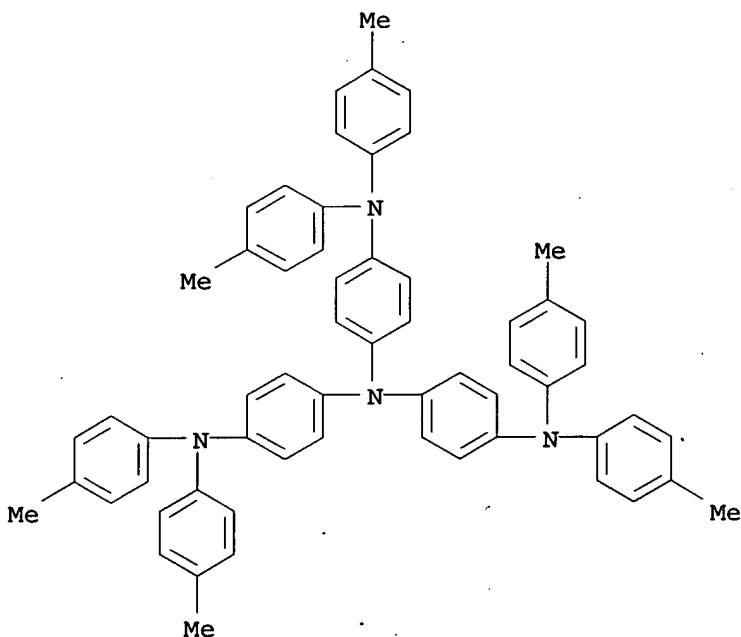
hydrocarbon, arom. heterocyclic, aralkyl). The device shows high luminance and high color purity.

IT 123173-91-1P

RL: DEV (Device component use); IMF (Industrial manufacture);  
MOA (Modifier or additive use); PREP (Preparation); USES (Uses)  
(red-light-emitting electroluminescent device contg. perylene  
compd.)

RN 123173-91-1 CAPPLUS

CN 1,4-Benzenediamine, N,N-bis[4-[bis(4-methylphenyl)amino]phenyl]-N'-bis(4-methylphenyl)- (9CI) (CA INDEX NAME)



IC ICM H05B033-14

ICS C09K011-06

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

Section cross-reference(s): 24, 25, 74

ST perylene red light emitting electroluminescent device; electroluminescent device perylene compd

IT Electroluminescent devices

(red-light-emitting electroluminescent device contg. perylene compd.)

IT 603-34-9P 2085-33-8P 4432-94-4P 6940-30-3P 14642-34-3P

15546-43-7P 24601-13-6P 112100-07-9P 123173-91-1P

134257-64-0P 146162-54-1P 157077-42-4P 157077-43-5P 194214-31-8P

194794-43-9P 214341-85-2P 221453-37-8P 223735-62-4P 227013-18-5P

227013-19-6P 227013-20-9P 227013-21-0P 227013-22-1P 227013-23-2P

227013-24-3P 227013-25-4P 227013-26-5P 227300-28-9P

RL: DEV (Device component use); IMF (Industrial manufacture);

MOA (Modifier or additive use); PREP (Preparation); USES (Uses)

(red-light-emitting electroluminescent device contg. perylene

compd.)

IT 67-56-1, Methanol, reactions 108-95-2, Phenol, reactions 128-65-4  
 4948-15-6 5521-31-3 7719-09-7, Thionyl chloride 82953-57-9  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (red-light-emitting electroluminescent device contg. perylene compd.)

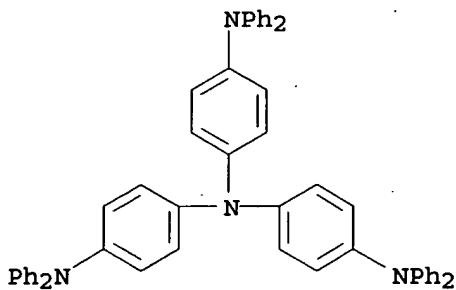
IT 227013-27-6P 227013-28-7P  
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT  
 (Reactant or reagent)  
 (red-light-emitting electroluminescent device contg. perylene compd.)

L48 ANSWER 30 OF 39 CAPLUS COPYRIGHT 2003 ACS

ACCESSION NUMBER: 1999:134359 CAPLUS  
 DOCUMENT NUMBER: 130:209493  
 TITLE: Preparation of tris(diarylarnino)triphenylamines and  
 their intermediates for electroluminescent devices  
 INVENTOR(S): Naruse, Hiroshi; Wada, Masaru; Kanamura, Yoshinobu  
 PATENT ASSIGNEE(S): Mitsui Chemicals Inc., Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 12 pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1

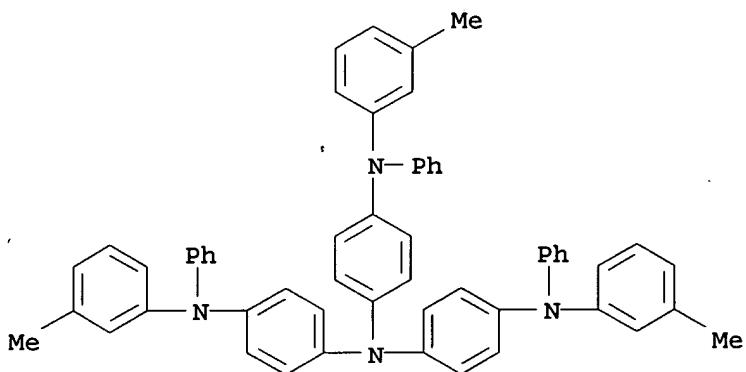
## PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 11049728	A2	19990223	JP 1997-213094	19970807
PRIORITY APPLN. INFO.:			JP 1997-213094	19970807
OTHER SOURCE(S):	CASREACT 130:209493; MARPAT 130:209493			
AB	Title compds. (p-X <sub>1</sub> X <sub>2</sub> NC <sub>6</sub> H <sub>4</sub> ) <sub>3</sub> N (I; X <sub>1</sub> = C <sub>6</sub> H <sub>4</sub> R; X <sub>2</sub> = C <sub>6</sub> H <sub>4</sub> R'; R, R' = H, alkyl), useful as hole-transporting materials for electroluminescent devices (no data), are prep'd. by reaction of I (X <sub>1</sub> = X <sub>2</sub> = H) (II) with (alkyl)cyclohexanones in the presence of H transfer catalysts and successive reaction of I (X <sub>1</sub> = C <sub>6</sub> H <sub>4</sub> R; X <sub>2</sub> = H) with (alkyl)cyclohexanones. II was treated with cyclohexanone in PhOH in the presence of Pd/C at 175.degree. for 15 h to give 89% I (X <sub>1</sub> = Ph, X <sub>2</sub> = H), which was treated with 3-methylcyclohexanone in m-cresol in the presence of Pd/C and isophthalic acid at 175.degree. for 20 h to give 70% I (X <sub>1</sub> = Ph, X <sub>2</sub> = C <sub>6</sub> H <sub>4</sub> Me-3).			
IT	105389-36-4P 124729-98-2P, 4,4',4'''-Tris[N-(3-methylphenyl)-N-phenylamino]triphenylamine RL: IMF (Industrial manufacture); SPN (Synthetic preparation); PREP (Preparation) (prep'n. of tris(diarylarnino)triphenylamines as hole-transporting materials for electroluminescent devices)			
RN	105389-36-4 CAPLUS			
CN	1,4-Benzenediamine, N,N-bis[4-(diphenylamino)phenyl]-N',N'-diphenyl- (9CI) (CA INDEX NAME)			



RN 124729-98-2 CAPLUS

CN 1,4-Benzenediamine, N-(3-methylphenyl)-N'-N'-bis[4-[(3-methylphenyl)phenylamino]phenyl]-N-phenyl- (9CI) (CA INDEX NAME)



IC ICM C07C211-54

ICS B01J023-44; C07C209-60; C07B061-00

CC 25-4 (Benzene, Its Derivatives, and Condensed Benzenoid Compounds)

Section cross-reference(s): 74

ST arylaminophenylamine prepn electroluminescent hole transporting material;  
amine triphenyl trisdiarylamino prepn; aminophenylamine condensation  
cyclohexanone

IT Electroluminescent devices

Hydrogen transfer catalysts

(prep. of tris(diarylamo)triphenylamines as hole-transporting  
materials for electroluminescent devices)

IT 7440-05-3, Palladium, uses

RL: CAT (Catalyst use); USES (Uses)

(hydrogen transfer catalyst; prep. of tris(diarylamo)triphenylamines  
as hole-transporting materials for electroluminescent devices)

IT 220901-71-3P 220901-77-9P

RL: IMF (Industrial manufacture); RCT (Reactant); SPN (Synthetic  
preparation); PREP (Preparation); RACT (Reactant or reagent)

(prep. of tris(diarylamo)triphenylamines as hole-transporting  
materials for electroluminescent devices)

IT 105389-36-4P 124729-98-2P, 4,4',4''-Tris[N-(3-

methylphenyl)-N-phenylamino]triphenylamine  
RL: IMF (Industrial manufacture); SPN (Synthetic preparation); PREP (Preparation)  
(prepn. of tris(diaryl amino)triphenylamines as hole-transporting materials for electroluminescent devices)

IT 108-94-1, Cyclohexanone, reactions 591-24-2, 3-Methylcyclohexanone 5981-09-9, 4,4',4'''-Triaminotriphenylamine  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(prepn. of tris(diaryl amino)triphenylamines as hole-transporting materials for electroluminescent devices)

L48 ANSWER 31 OF 39 CAPLUS COPYRIGHT 2003 ACS

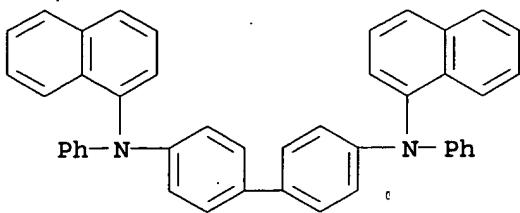
ACCESSION NUMBER: 1999:101276 CAPLUS  
DOCUMENT NUMBER: 130:145969  
TITLE: Organic electroluminescent device  
INVENTOR(S): Kawamura, Hisayuki; Hosokawa, Chishio  
PATENT ASSIGNEE(S): Idemitsu Kosan Company Limited, Japan  
SOURCE: Eur. Pat. Appl., 15 pp.

DOCUMENT TYPE: Patent  
LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

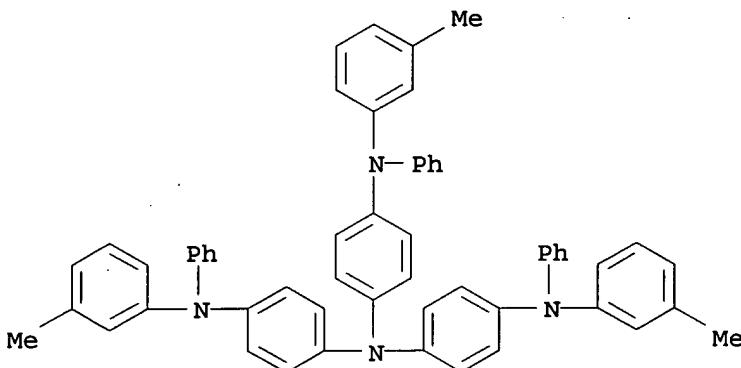
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 895442	A1	19990203	EP 1998-113813	19980723
EP 895442	B1	20021204		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
JP 11054271	A2	19990226	JP 1997-205579	19970731
US 6259203	B1	20010710	US 1998-121831	19980724
US 2001015617	A1	20010823	US 2001-773691	20010202
US 6504300	B2	20030107		
PRIORITY APPLN. INFO.:			JP 1997-205579 A	19970731
			US 1998-121831 A1	19980724
AB	Org. electroluminescent devices comprising .gtoreq.1 org. compd. layers including .gtoreq.1 org. light-emitting layer sandwiched between a pair of electrodes are described in which .gtoreq.1 of the org. compds. used for forming the org. compd. has an electron spin no. of .ltoreq.1013/mg of the compd.			
IT	123847-85-8P 124729-98-2P RL: DEV (Device component use); PRP (Properties); PUR (Purification or recovery); SPN (Synthetic preparation); PREP (Preparation); USES (Uses) (org. electroluminescent devices employing compds. with relatively low electron spin nos.)			
RN	123847-85-8 CAPLUS			
CN	[1,1'-Biphenyl]-4,4'-diamine, N,N'-di-1-naphthalenyl-N,N'-diphenyl- (9CI) (CA INDEX NAME)			



RN 124729-98-2 CAPLUS

CN 1,4-Benzenediamine, N-(3-methylphenyl)-N'-bis[4-[(3-methylphenyl)phenylamino]phenyl]-N-phenyl- (9CI) (CA INDEX NAME)



IC ICM H05B033-14  
ICS G01N024-10

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

Section cross-reference(s): 76

ST org electroluminescent device low spin compd

IT Electroluminescent devices

Electroluminescent devices  
(org.; org. electroluminescent devices employing compds. with relatively low electron spin nos.)

IT 144810-08-2P  
RL: DEV (Device component use); MOA (Modifier or additive use); PRP (Properties); PUR (Purification or recovery); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)  
(org. electroluminescent devices employing compds. with relatively low electron spin nos.)

IT 123847-85-8P 124729-98-2P 213527-39-0P  
RL: DEV (Device component use); PRP (Properties); PUR (Purification or recovery); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)  
(org. electroluminescent devices employing compds. with relatively low electron spin nos.)

IT 2085-33-8P, Tris(8-hydroxyquinolinato)aluminum  
RL: DEV (Device component use); PUR (Purification or recovery); PREP

(Preparation); USES (Uses)

(org. electroluminescent devices employing compds. with relatively low electron spin nos.)

IT 90-14-2, 1-Iodonaphthalene 119-61-9, Benzophenone, reactions 531-91-9, N,N'-Diphenylbenzidine 1205-64-7 4181-05-9 4181-20-8 41425-58-5

RL: RCT (Reactant); RACT (Reactant or reagent)

(org. electroluminescent devices employing compds. with relatively low electron spin nos.)

REFERENCE COUNT: 7 THERE ARE 7 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L48 ANSWER 32 OF 39 CAPLUS COPYRIGHT 2003 ACS

ACCESSION NUMBER: 1998:685335 CAPLUS

DOCUMENT NUMBER: 129:323790

TITLE: Organic EL (electroluminescent) device containing triarylamine derivative

INVENTOR(S): Inoue, Tetsuji; Shirota, Yasuhiko; Aotani, Junji

PATENT ASSIGNEE(S): TDK Electronics Co., Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 28 pp.

CODEN: JKXXAF

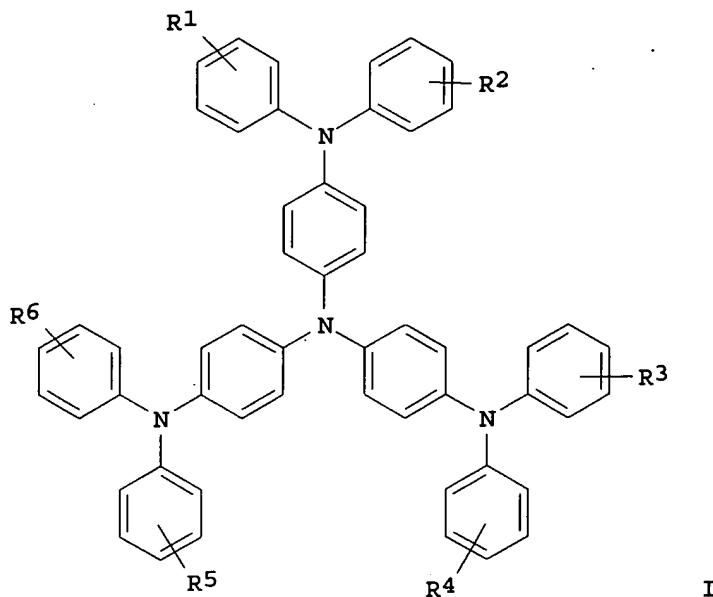
DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 10284252	A2	19981023	JP 1997-101078	19970403
PRIORITY APPLN. INFO.:	JP 1997-101078			
OTHER SOURCE(S):	MARPAT 129:323790			
GI				



**AB** The device has .gtoreq.1 org. compd. layer contg. a triarylamine deriv. I (R1-6 = H, alkyl, alkoxy, 3-Ph, phenoxy, arylamino, diarylamino; .gtoreq.1 of R1-6 = 3-Ph, arylamino, diarylamino). The device showed low driving voltage, high and stable luminance, and good heat resistance.

**IT** 124729-98-2P 214545-00-3P 214545-01-4P

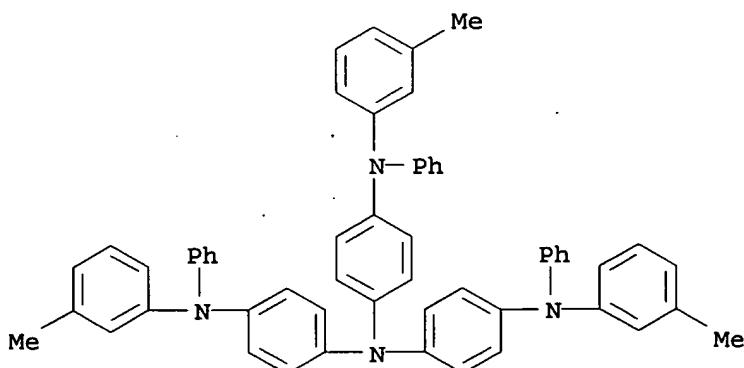
214545-03-6P

RL: DEV (Device component use); PNU (Preparation, unclassified); **PREP** (**Preparation**); USES (Uses)

(high-luminance **electroluminescent** device contg. triarylamine deriv.)

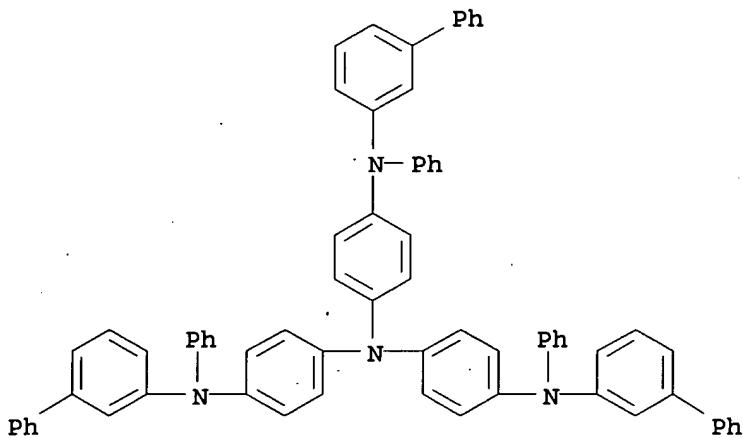
**RN** 124729-98-2 CAPLUS

**CN** 1,4-Benzenediamine, N-(3-methylphenyl)-N'-bis[4-[(3-methylphenyl)phenylamino]phenyl]-N-phenyl- (9CI) (CA INDEX NAME)



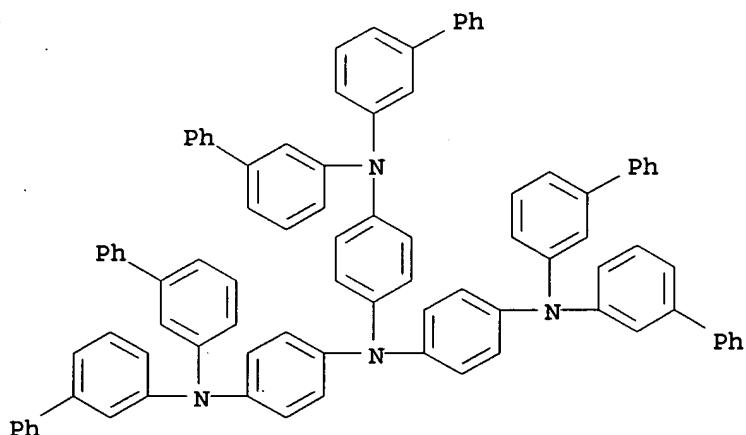
RN 214545-00-3 CAPLUS

CN 1,4-Benzenediamine, N-[1,1'-biphenyl]-3-yl-N',N'-bis[4-([1,1'-biphenyl]-3-ylphenylamino)phenyl]-N-phenyl- (9CI) (CA INDEX NAME)



RN 214545-01-4 CAPLUS

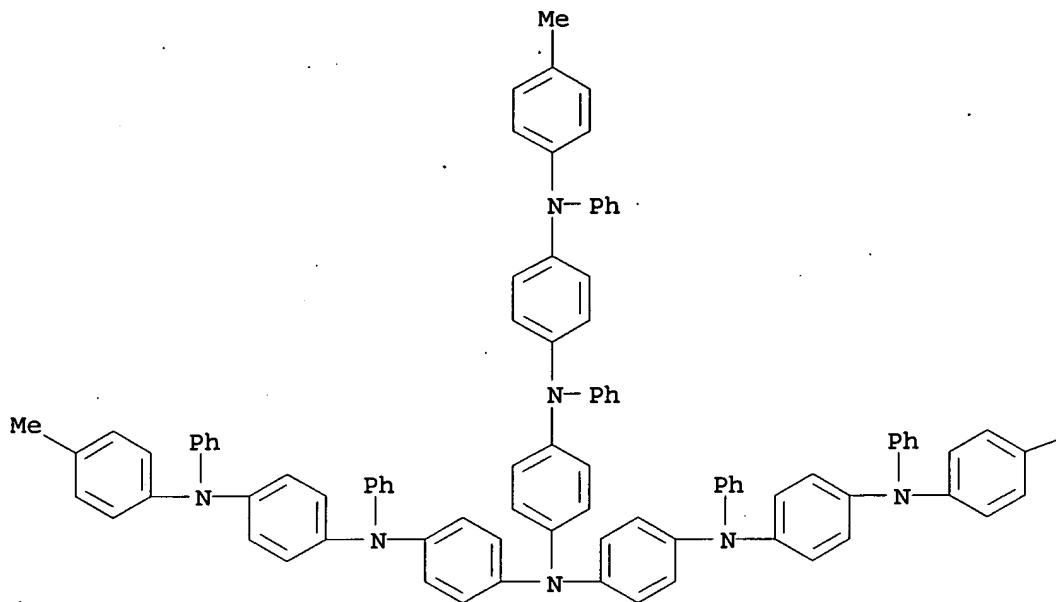
CN 1,4-Benzenediamine, N,N-bis([1,1'-biphenyl]-3-yl)-N',N'-bis[4-(bis[1,1'-biphenyl]-3-ylamino)phenyl]- (9CI) (CA INDEX NAME)



RN 214545-03-6 CAPLUS

CN 1,4-Benzenediamine, N-[4-[(4-methylphenyl)phenylamino]phenyl]-N',N'-bis[4-[(4-[(4-methylphenyl)phenylamino]phenyl)phenylamino]phenyl]-N-phenyl- (9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 1-B

Me

IC ICM H05B033-22  
ICS C09K011-06

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

Section cross-reference(s): 25

ST aryl amine hole transporter electroluminescent device

IT Electroluminescent devices

(high-luminance electroluminescent device contg. triarylamine deriv.)

IT 124729-98-2P 214545-00-3P 214545-01-4P  
214545-03-6P  
RL: DEV (Device component use); PNU (Preparation, unclassified); PREP (Preparation); USES (Uses)  
(high-luminance electroluminescent device contg. triarylamine deriv.)  
IT 214545-02-5P  
RL: PNU (Preparation, unclassified); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)  
(high-luminance electroluminescent device contg. triarylamine deriv.)  
IT 74-31-7, N,N'-Diphenyl-1,4-phenylenediamine 624-31-7, 4-Iodotoluene  
625-95-6, 3-Iodotoluene 4181-20-8, 4,4',4''-Triiodotriphenylamine  
169224-65-1 198275-79-5  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(high-luminance electroluminescent device contg. triarylamine deriv.)

L48 ANSWER 33 OF 39 CAPLUS COPYRIGHT 2003 ACS  
ACCESSION NUMBER: 1998:488341 CAPLUS  
DOCUMENT NUMBER: 129:115445  
TITLE: Organic electroluminescent device  
INVENTOR(S): Inoue, Tetsushi; Aotani, Junji; Fujita, Tetsuji; Endo, Hiroyuki  
PATENT ASSIGNEE(S): TDK Corp., Japan  
SOURCE: PCT Int. Appl., 157 pp.  
CODEN: PIXXD2  
DOCUMENT TYPE: Patent  
LANGUAGE: Japanese  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9830071	A1	19980709	WO 1997-JP4904	19971226
W: JP, US				
RW: AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
EP 891121	A1	19990113	EP 1997-950436	19971226
R: DE, FR, GB, NL				
US 6344283	B1	20020205	US 1998-125791	19980828
US 2002102434	A1	20020801	US 2002-35161	20020104
PRIORITY APPLN. INFO.:			JP 1996-358416	A 19961228
			WO 1997-JP4904	W 19971226
			US 1998-125791	A1 19980828
OTHER SOURCE(S):	MARPAT 129:115445			
GI				

\* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT \*

AB An electroluminescent (EL) device comprises org. layers at least one of which comprises a compd. having the skeleton represented by I [L = 2-4

phenylene groups, or (un)substituted aminophenyl group may be contained at the center if L0 comprises 4 phenylene rings; R1, R2, R3, and R4 = II, III, and IV; R11, R12, R13, R14, R15, R16, and R17 = (un)substituted aryl groups; and m, n, p, and q = integer 0-5, with  $(m+n+p+q) \geq 1$ .

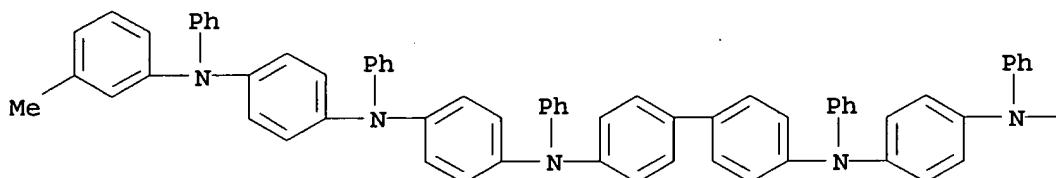
IT 209980-49-4P 209980-50-7P 209980-51-8P

RL: DEV (Device component use); PNU (Preparation, unclassified); PREP (Preparation); USES (Uses)  
(org. electroluminescent elements)

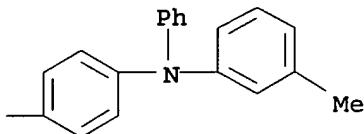
RN 209980-49-4 CAPLUS

CN [1,1'-Biphenyl]-4,4'-diamine, N,N'-bis[4-[[4-[(3-methylphenyl)phenylamino]phenyl]phenylamino]phenyl]-N,N'-diphenyl- (9CI)  
(CA INDEX NAME)

PAGE 1-A



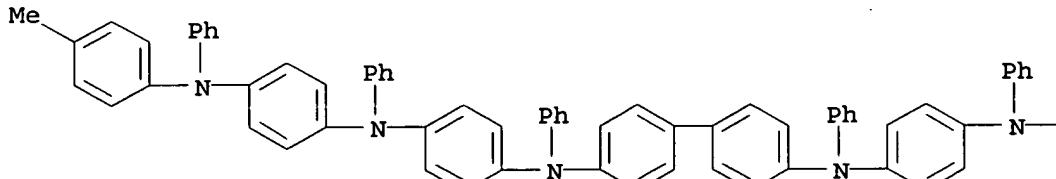
PAGE 1-B



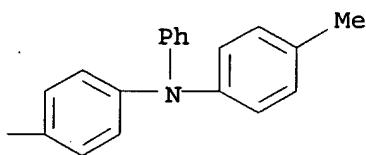
RN 209980-50-7 CAPLUS

CN [1,1'-Biphenyl]-4,4'-diamine, N,N'-bis[4-[[4-[(4-methylphenyl)phenylamino]phenyl]phenylamino]phenyl]-N,N'-diphenyl- (9CI)  
(CA INDEX NAME)

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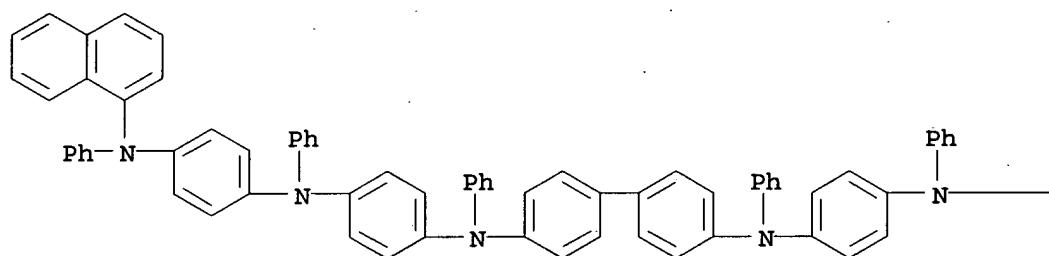
PAGE 1-B



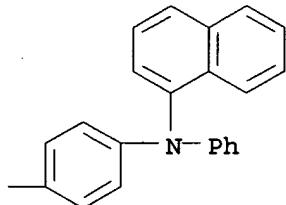
RN 209980-51-8 CAPLUS

CN [1,1'-Biphenyl]-4,4'-diamine, N,N'-bis[4-[[4-(1-naphthalenylphenylamino)phenyl]phenylamino]phenyl]-N,N'-diphenyl- (9CI)  
(CA INDEX NAME)

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PAGE 1-B



IC ICM H05B033-22

ICS H05B033-14; C09K011-06

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

ST org electroluminescent device benzidines

IT Electroluminescent devices  
(org.; org. electroluminescent elements)

IT 517-51-1P, Rubren 2085-33-8P, Al 8q 169224-61-7P 203007-32-3P  
209980-47-2P 209980-48-3P 209980-49-4P 209980-50-7P  
209980-51-8P 209980-52-9P 209980-53-0P

RL: DEV (Device component use); PNU (Preparation, unclassified); PREP  
(Preparation); USES (Uses)  
(org. electroluminescent elements)

REFERENCE COUNT: 8 THERE ARE 8 CITED REFERENCES AVAILABLE FOR THIS

## RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L48 ANSWER 34 OF 39 CAPLUS COPYRIGHT 2003 ACS  
 ACCESSION NUMBER: 1998:398346 CAPLUS  
 DOCUMENT NUMBER: 129:87816  
 TITLE: Material for organoelectroluminescence device and  
 organoelectroluminescence device using the material  
 INVENTOR(S): Tamano, Michiko; Onikubo, Toshikazu; Okutsu, Satoshi;  
 Enokida, Toshio  
 PATENT ASSIGNEE(S): Toyo Ink Manufacturing Co., Ltd., Japan  
 SOURCE: Eur. Pat. Appl., 26 pp.  
 CODEN: EPXXDW  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 848579	A2	19980617	EP 1997-310157	19971216
EP 848579	A3	19980902		
EP 848579	B1	20030326		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
JP 10233287	A2	19980902	JP 1997-301457	19971104
US 5948941	A	19990907	US 1997-990193	19971212
PRIORITY APPLN. INFO.:			JP 1996-335217	A 19961216
			JP 1997-301457	A 19971104
OTHER SOURCE(S):		MARPAT 129:87816		
GI				

\* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT \*

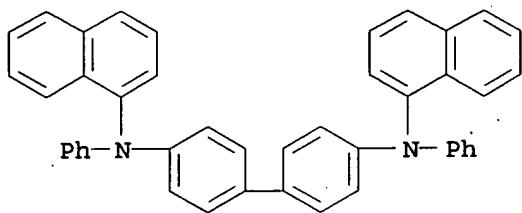
AB Compds. suitable for use in electroluminescent devices are described by such general formula as I (A= Q, Q1, Q2; Ar1-6 = independently selected (un)substituted aryl groups; X1-6 = independently selected O, S, C:O, SO<sub>2</sub>, Si(B1)B2, N(B1), PB1, P(:O)B1-, -(CH<sub>2</sub>)<sub>x</sub>-O-(CH<sub>2</sub>)<sub>y</sub>-, (un)substituted alkylene groups, or (un)substituted alicyclic moieties; B1 and B2 = independently selected (un)substituted alkyl group or a (un)substituted aryl group), etc. The materials may be hole-injecting materials. Devices using the materials, including display devices, are also described, as is the use of the materials in the devices.

IT 123847-85-8, 4,4'-Bis(N-(1-naphthyl)-N-phenylamino)biphenyl  
 209165-05-9 209165-06-0 209165-08-2  
 209165-10-6 209165-12-8 209165-14-0  
 209165-15-1 209165-16-2 209165-17-3  
 209165-18-4  
 RL: DEV (Device component use); USES (Uses)  
 (materials for org. electroluminescent devices based on

benzene and triphenylamine derivs. and devices using them)

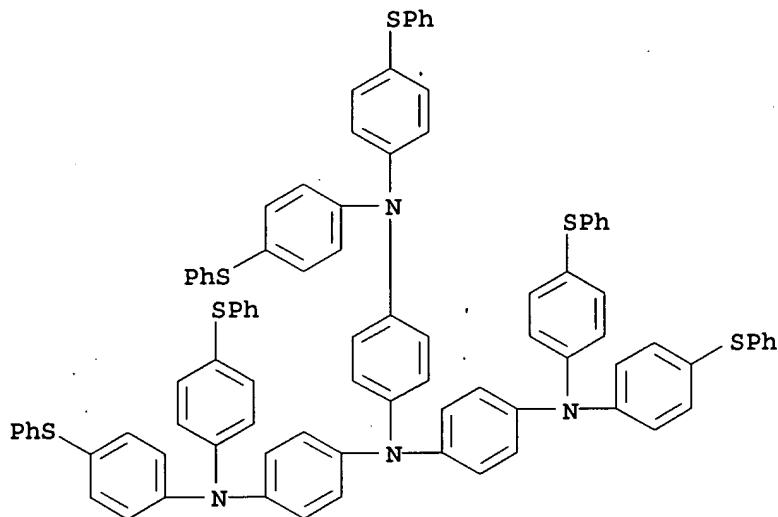
RN 123847-85-8 CAPLUS

CN [1,1'-Biphenyl]-4,4'-diamine, N,N'-di-1-naphthalenyl-N,N'-diphenyl- (9CI)  
(CA INDEX NAME)



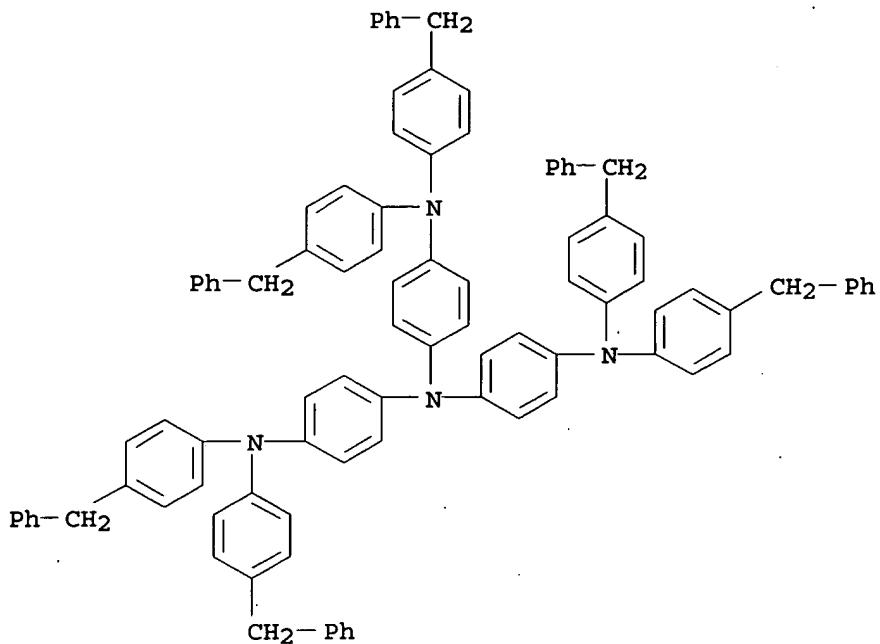
RN 209165-05-9 CAPLUS

CN 1,4-Benzenediamine, N,N-bis[4-[bis[4-(phenylthio)phenyl]amino]phenyl]-  
N',N'-bis[4-(phenylthio)phenyl]- (9CI) (CA INDEX NAME)



RN 209165-06-0 CAPLUS

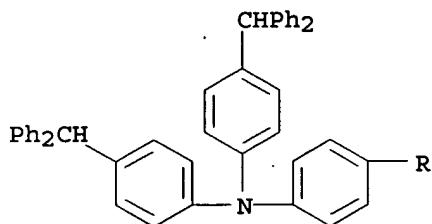
CN 1,4-Benzenediamine, N,N-bis[4-[bis[4-(phenylmethyl)phenyl]amino]phenyl]-  
N',N'-bis[4-(phenylmethyl)phenyl]- (9CI) (CA INDEX NAME)



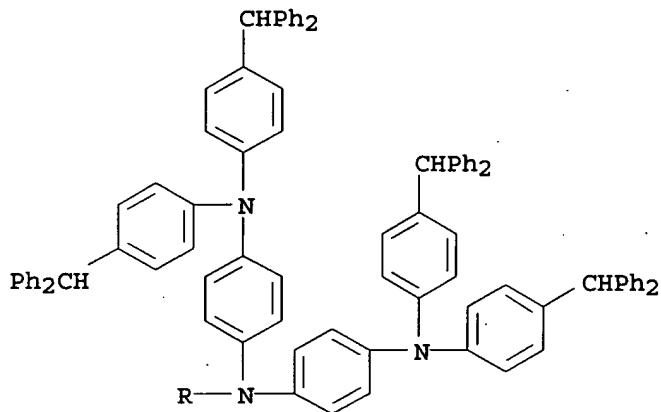
RN 209165-08-2 CAPLUS

CN 1,4-Benzenediamine, N,N-bis[4-[bis[4-(diphenylmethyl)phenyl]amino]phenyl]-N',N'-bis[4-(diphenylmethyl)phenyl] - (9CI) (CA INDEX NAME)

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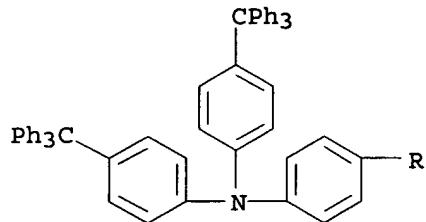
PAGE 2-A



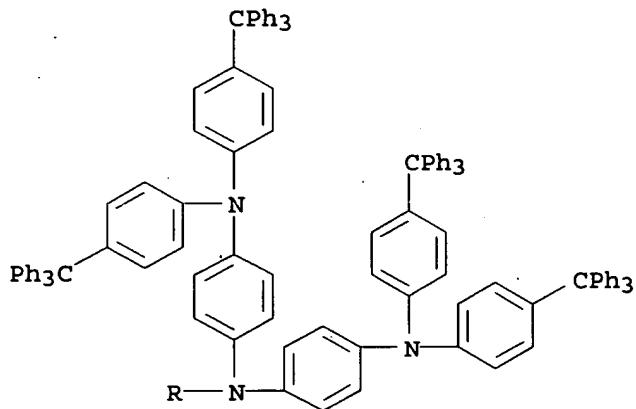
RN 209165-10-6 CAPLUS

CN 1,4-Benzenediamine, N,N-bis[4-[bis[4-(triphenylmethyl)phenyl]amino]phenyl]-N',N'-bis[4-(triphenylmethyl)phenyl] - (9CI) (CA INDEX NAME)

PAGE 1-A



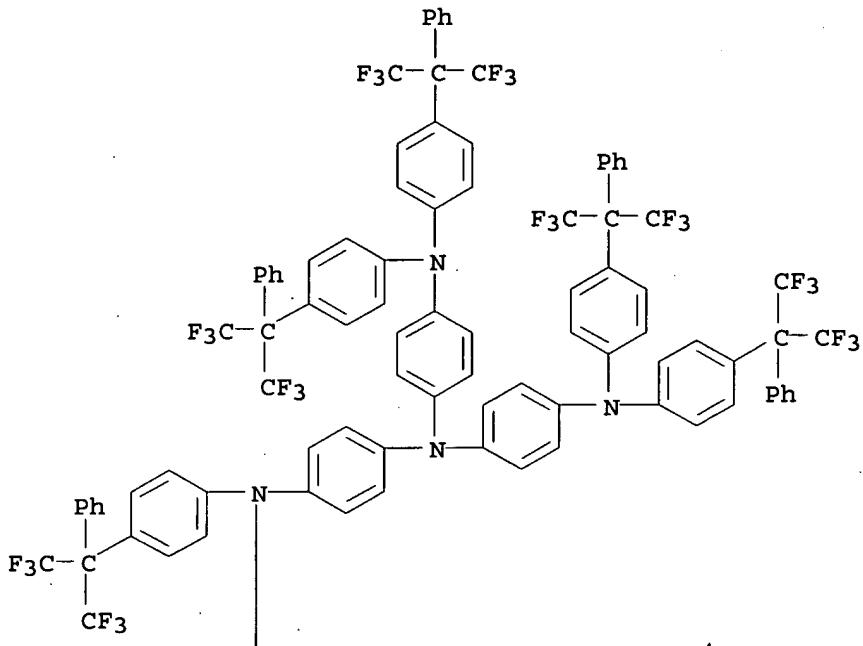
PAGE 2-A



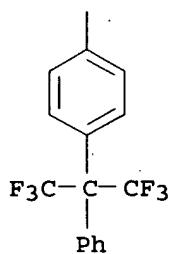
RN 209165-12-8 CAPLUS

CN 1,4-Benzenediamine, N,N'-bis[4-[4-[2,2,2-trifluoro-1-phenyl-1-(trifluoromethyl)ethyl]phenyl]amino]phenyl]-N',N'-bis[4-[2,2,2-trifluoro-1-phenyl-1-(trifluoromethyl)ethyl]phenyl]- (9CI) (CA INDEX NAME)

PAGE 1-A

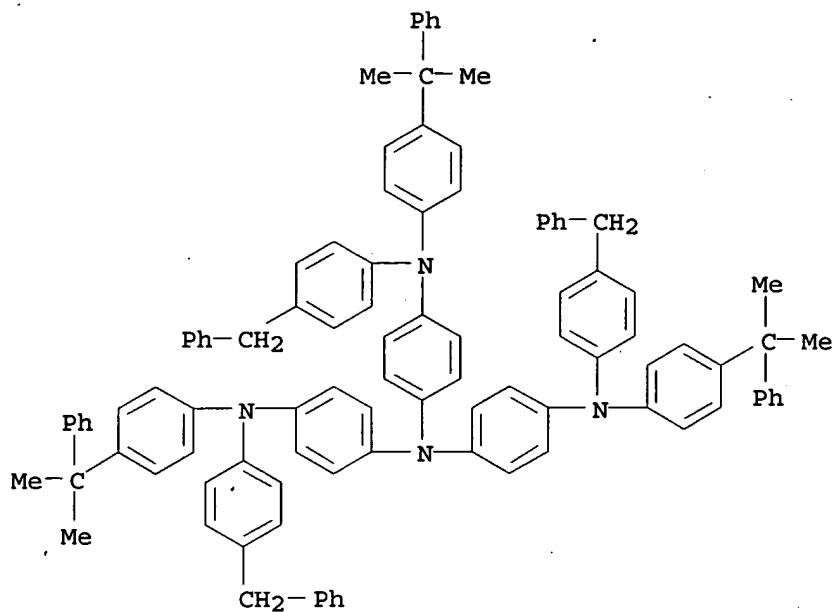


PAGE 2-A



RN 209165-14-0 CAPLUS

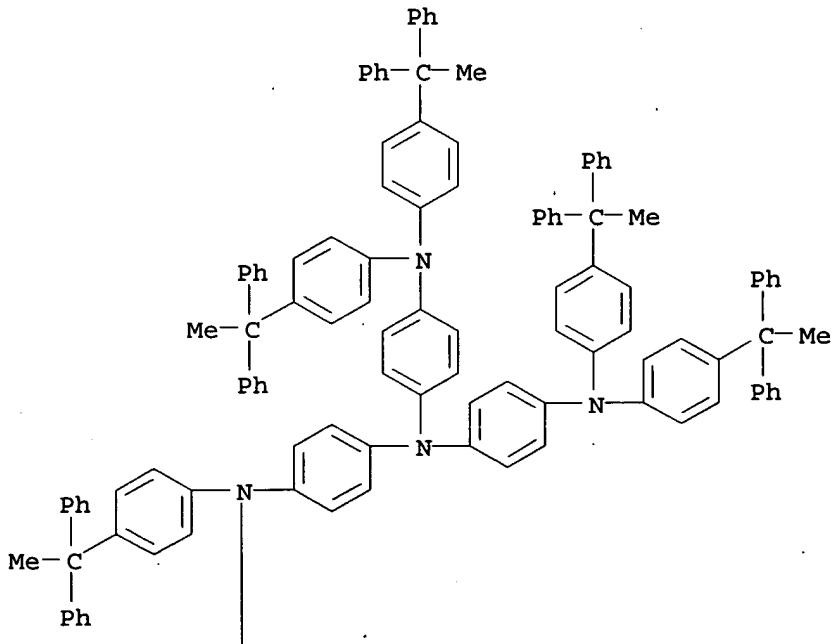
CN 1,4-Benzenediamine, N-[4-(1-methyl-1-phenylethyl)phenyl]-N',N'-bis[4-[4-(1-methyl-1-phenylethyl)phenyl][4-(phenylmethyl)phenyl]amino]phenyl]-N-[4-(phenylmethyl)phenyl]- (9CI) (CA INDEX NAME)



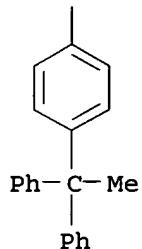
RN 209165-15-1 CAPLUS

CN 1,4-Benzenediamine, N,N-bis[4-[bis[4-(1,1-diphenylethyl)phenyl]amino]phenyl]-N'-N'-bis[4-(1,1-diphenylethyl)phenyl] - (9CI) (CA INDEX NAME)

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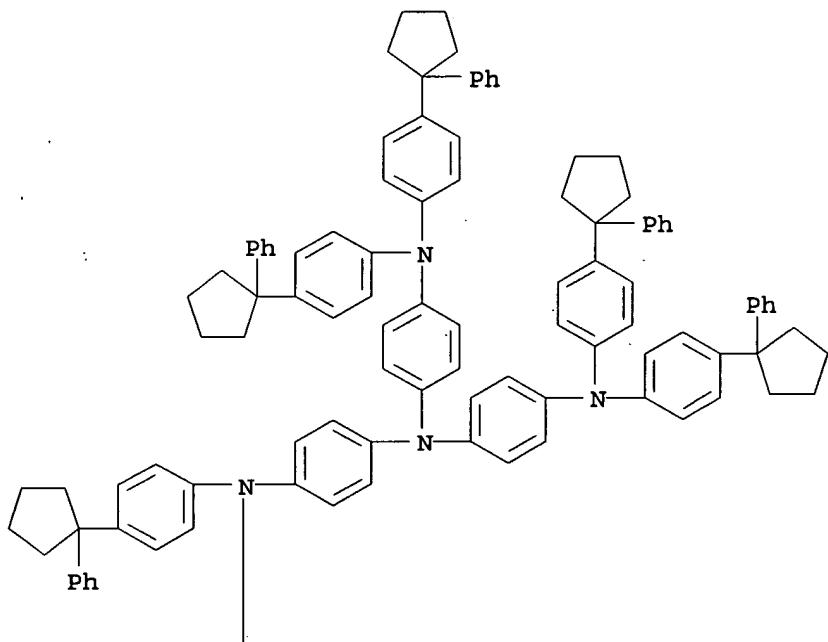
PAGE 2-A



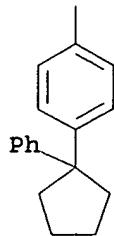
RN 209165-16-2 CAPLUS

CN 1,4-Benzenediamine, N,N-bis[4-[bis[4-(1-phenylcyclopentyl)phenyl]amino]phenyl]-N',N'-bis[4-(1-phenylcyclopentyl)phenyl]- (9CI) (CA INDEX NAME)

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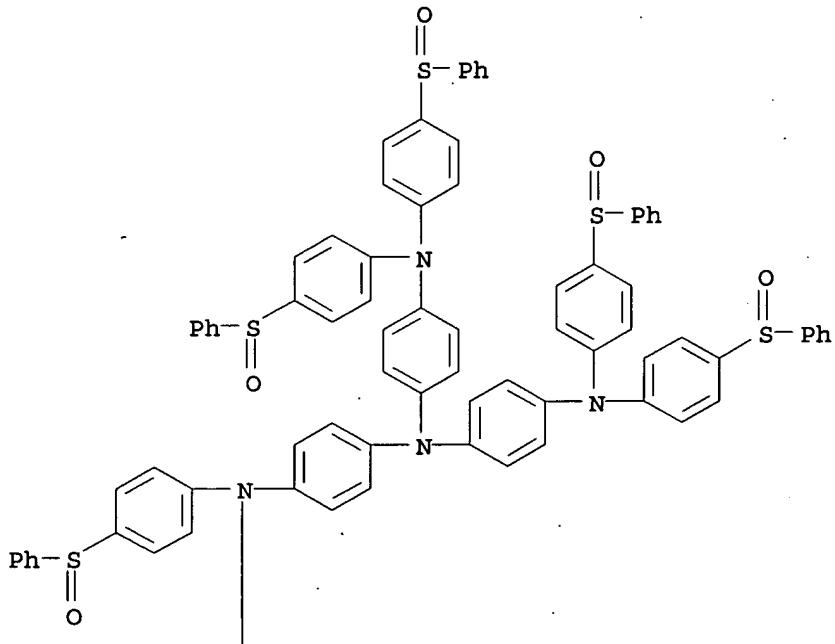
PAGE 2-A



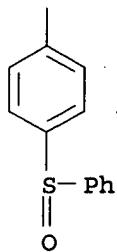
RN 209165-17-3 CAPLUS

CN 1,4-Benzenediamine, N,N-bis[4-[bis[4-(phenylsulfinyl)phenyl]amino]phenyl]-N',N'-bis[4-(phenylsulfinyl)phenyl]- (9CI) (CA INDEX NAME)

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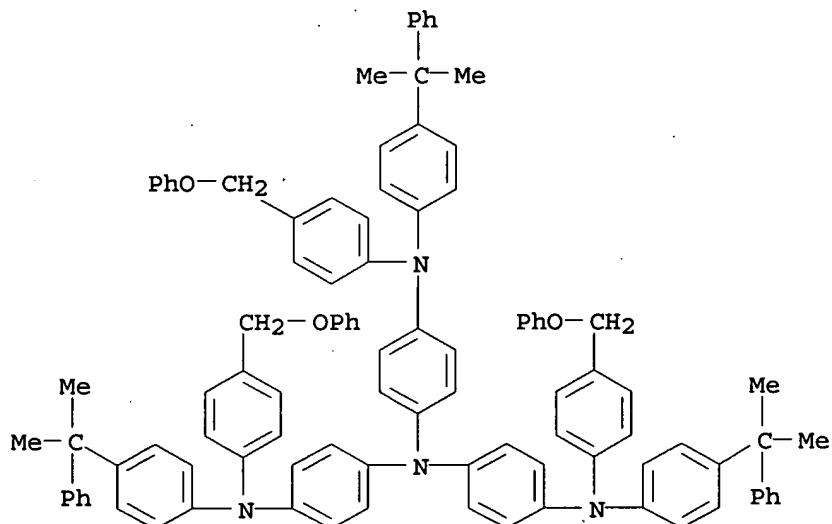


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RN 209165-18-4 CAPLUS

CN 1,4-Benzenediamine, N-[4-(1-methyl-1-phenylethyl)phenyl]-N'-bis[4-[(4-(1-methyl-1-phenylethyl)phenyl)[4-(phenoxyethyl)phenyl]amino]phenyl]-N-[4-(phenoxyethyl)phenyl]- (9CI) (CA INDEX NAME)



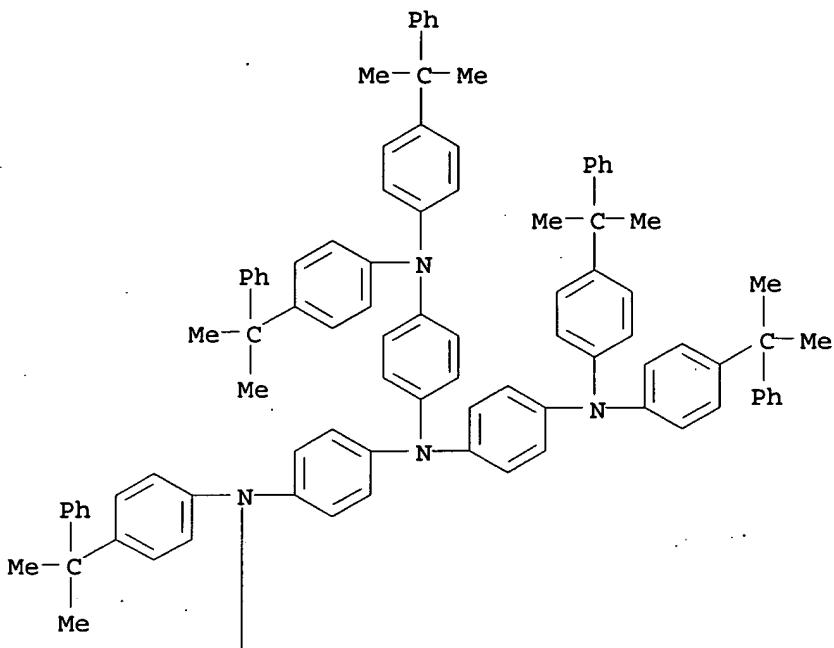
IT 209165-07-1P

RL: DEV (Device component use); PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)  
(materials for org. electroluminescent devices based on benzene and triphenylamine derivs. and devices using them)

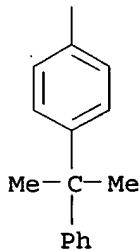
RN 209165-07-1 CAPLUS

CN 1,4-Benzenediamine, N,N-bis[4-[bis[4-(1-methyl-1-phenylethyl)phenyl]amino]phenyl]-N',N'-bis[4-(1-methyl-1-phenylethyl)phenyl]- (9CI) (CA INDEX NAME)

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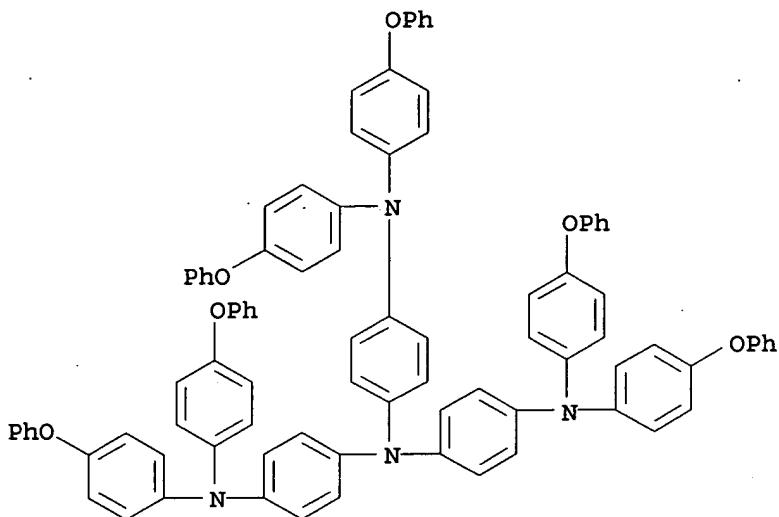
IT 209165-09-3P

RL: DEV (Device component use); SPN (Synthetic preparation);  
PREP (Preparation); USES (Uses)

(materials for org. electroluminescent devices based on  
benzene and triphenylamine derivs. and devices using them)

RN 209165-09-3 CAPLUS

CN 1,4-Benzenediamine, N,N-bis[4-[bis(4-phenoxyphenyl)amino]phenyl]-N',N'-  
bis(4-phenoxyphenyl)- (9CI) (CA INDEX NAME)



IC ICM H05B033-14  
CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)  
Section cross-reference(s): 74, 76  
ST benzene deriv electroluminescent material; triphenylamine deriv electroluminescent material; display electroluminescent device org material; hole injecting org material electroluminescent device  
IT Phosphors  
(electroluminescent; materials for org. electroluminescent devices based on benzene and triphenylamine derivs. and devices using them)  
IT Electroluminescent devices  
(materials for org. electroluminescent devices based on benzene and triphenylamine derivs. and devices using them)  
IT Polycarbonates, uses  
RL: DEV (Device component use); USES (Uses)  
(materials for org. electroluminescent devices based on benzene and triphenylamine derivs. and devices using them)  
IT 2085-33-8, Tris(8-hydroxyquinolinato)aluminum 15082-28-7 24936-68-3,  
uses 123847-85-8, 4,4'-Bis(N-(1-naphthyl)-N-phenylamino)biphenyl  
175395-59-2 188049-36-7 209165-05-9 209165-06-0  
209165-08-2 209165-10-6 209165-12-8  
209165-14-0 209165-15-1 209165-16-2  
209165-17-3 209165-18-4 209165-19-5 209165-20-8  
209165-21-9 209165-22-0 209165-23-1 209165-24-2 209165-26-4  
209165-27-5 209165-28-6 209165-29-7 209165-31-1 209165-32-2  
209165-34-4  
RL: DEV (Device component use); USES (Uses)  
(materials for org. electroluminescent devices based on benzene and triphenylamine derivs. and devices using them)  
IT 209165-07-1P  
RL: DEV (Device component use); PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)

(materials for org. **electroluminescent** devices based on benzene and triphenylamine derivs. and devices using them)  
IT 209165-09-3P 209165-25-3P 209165-30-0P  
RL: DEV (Device component use); **SPN** (**Synthetic preparation**); **PREP** (**Preparation**); **USES** (**Uses**)  
(materials for org. **electroluminescent** devices based on benzene and triphenylamine derivs. and devices using them)  
IT 80-73-9, 1,3-Dimethyl-2-imidazolidinone 98-95-3, Nitrobenzene, reactions  
615-68-9 4316-58-9, Tris(p-bromophenyl)amine 10081-67-1 18162-30-6  
209165-33-3  
RL: RCT (**Reactant**); RACT (**Reactant or reagent**)  
(materials for org. **electroluminescent** devices based on benzene and triphenylamine derivs. and devices using them)

L48 ANSWER 35 OF 39 CAPLUS COPYRIGHT 2003 ACS

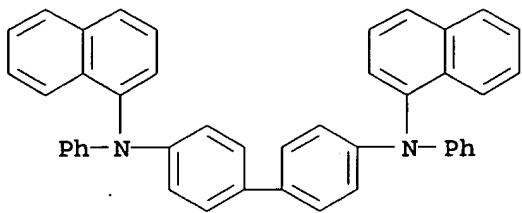
ACCESSION NUMBER: 1998:219973 CAPLUS  
DOCUMENT NUMBER: 128:263743  
TITLE: Multicolor electroluminescent devices with high-purity blue emission  
INVENTOR(S): Hosokawa, Chishio; Kofuji, Takeki  
PATENT ASSIGNEE(S): Idemitsu Kosan Co., Ltd., Japan  
SOURCE: Jpn. Kokai Tokkyo Koho, 14 pp.  
CODEN: JKXXAF  
DOCUMENT TYPE: Patent  
LANGUAGE: Japanese  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 10092575	A2	19980410	JP 1996-269322	19960919
PRIORITY APPLN. INFO.:			JP 1996-269322	19960919

AB In the devices, the 1st luminescent devices wherein red- and green-emitting elements are sep. arranged and the 2nd luminescent devices contg. blue-emitting elements are laminated so that the planes mounting the emitting elements are faced each other. The red- and green-emitting elements are in inorg. layers and the blue-emitting elements are in org. layers, where the inorg. and org. layers are retained by pair of electrodes. The devices may involve blue (or red) color filters on the emission sides of the 1st (or the 2nd) luminescent devices.

IT 123847-85-8P, 4,4'-Bis[N-(1-naphthyl)-N-phenylamino]biphenyl  
RL: DEV (Device component use); PNU (**Preparation, unclassified**); **PREP** (**Preparation**); **USES** (**Uses**)  
(hole-injecting layers; multicolor **electroluminescent** devices with high-purity blue emission)

RN 123847-85-8 CAPLUS  
CN [1,1'-Biphenyl]-4,4'-diamine, N,N'-di-1-naphthalenyl-N,N'-diphenyl- (9CI)  
(CA INDEX NAME)



IC ICM H05B033-14  
ICS C09K011-54; H05B033-22; C09K011-06  
CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)  
ST multicolor electroluminescent device blue emission purity; color filter  
contg multilayer electroluminescent device; RGB element sepd multicolor  
electroluminescent device  
IT Photoresists  
(color filters; multicolor electroluminescent devices with high-purity  
blue emission)  
IT Electroluminescent devices  
(color; multicolor electroluminescent devices with high-purity blue  
emission)  
IT Optical filters  
(multicolor electroluminescent devices with high-purity blue emission)  
IT 1314-98-3, Zinc sulfide, uses  
RL: DEV (Device component use); USES (Uses)  
(Mn-doped; multicolor electroluminescent devices with high-purity blue  
emission)  
IT 142289-08-5P, 4,4'-Bis(2,2-diphenylvinyl)biphenyl  
RL: DEV (Device component use); PNU (Preparation, unclassified); PREP  
(Preparation); USES (Uses)  
(blue-emitting layers; multicolor electroluminescent devices with  
high-purity blue emission)  
IT 37271-44-6P  
RL: DEV (Device component use); PNU (Preparation, unclassified); PREP  
(Preparation); USES (Uses)  
(counter electrodes; multicolor electroluminescent devices with  
high-purity blue emission)  
IT 7439-96-5, Manganese, uses 7440-27-9, Terbium, uses  
RL: DEV (Device component use); MOA (Modifier or additive use); USES  
(Uses)  
(dopant; multicolor electroluminescent devices with high-purity blue  
emission)  
IT 117944-65-7P, Indium zinc oxide  
RL: DEV (Device component use); PNU (Preparation, unclassified); PREP  
(Preparation); USES (Uses)  
(electrodes; multicolor electroluminescent devices with high-purity  
blue emission)  
IT 123847-85-8P, 4,4'-Bis[N-(1-naphthyl)-N-phenylamino]biphenyl  
RL: DEV (Device component use); PNU (Preparation, unclassified); PREP  
(Preparation); USES (Uses)

(hole-injecting layers; multicolor electroluminescent devices with high-purity blue emission)

IT 1314-61-0P, Tantalum pentoxide 97458-80-5P, Tantalum trioxide  
RL: DEV (Device component use); PNU (Preparation, unclassified); PREP (Preparation); USES (Uses)  
(insulating layers; multicolor electroluminescent devices with high-purity blue emission)

L48 ANSWER 36 OF 39 CAPLUS COPYRIGHT 2003 ACS

ACCESSION NUMBER: 1997:760093 CAPLUS

DOCUMENT NUMBER: 128:41003

TITLE: Thermally stable organic electroluminescent device using novel amorphous molecular charge-transport materials, 4,4',4'''-tris[bis(4'-tert-butylbiphenyl-4-yl)amino]triphenylamine and 4,4',4'''-tri(N-carbazolyl)triphenylamine

AUTHOR(S): Ogawa, Hiromitsu; Inada, Hiroshi; Shirota, Yasuhiko

CORPORATE SOURCE: Dep. Applied Chem., Fac. Eng., Osaka Univ., Suita, 565, Japan

SOURCE: Macromolecular Symposia (1998), 125(Organic Light-Emitting Materials and Devices), 171-180

CODEN: MSYMEC; ISSN: 1022-1360

PUBLISHER: Huethig & Wepf Verlag

DOCUMENT TYPE: Journal

LANGUAGE: English

AB For the purpose of developing an amorphous mol. material with a high glass transition temp. (Tg) and a low ionization potential for use as a charge-transport layer in org. electroluminescent (EL) devices, a novel starburst mol., 4,4',4'''-tris[bis(4'-tert-butylbiphenyl-4-yl)amino]triphenylamine (t-Bu-TBATA), was designed and synthesized. T-Bu-TBATA was found to form readily a stable glass with a Tg of 203.degree.. A multilayer EL device consisting of double hole transport layers of t-Bu-TBATA and 4,4',4'''-tri(N-carbazolyl)triphenylamine and an emitting layer of tris(8-quinolinolato) Al was fabricated and its performances were examd. The device was found to exhibit good performances and to be thermally stable, operating even at 170.degree..

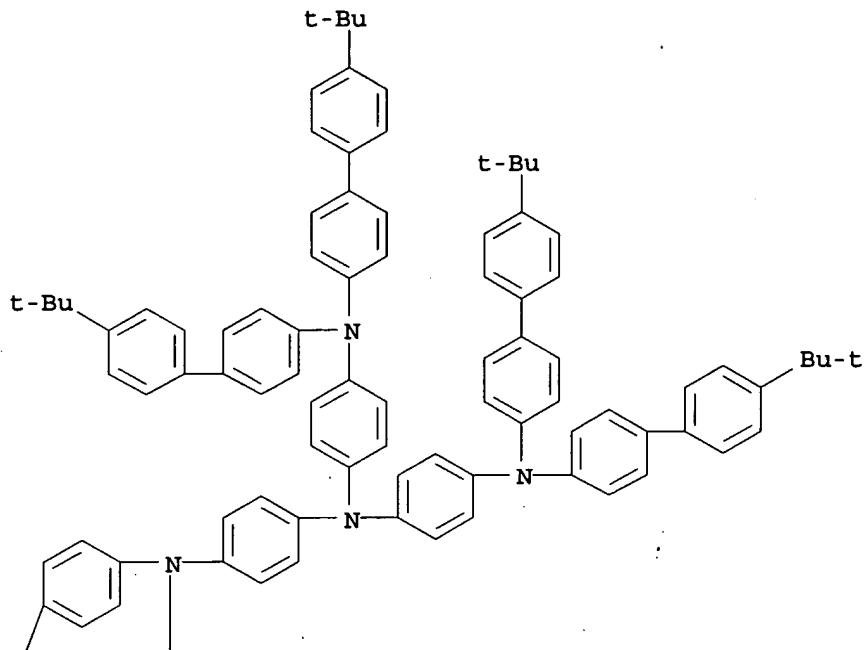
IT 199674-26-5P

RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); PROC (Process); USES (Uses)  
(prepn., glass transition temp., and performance in electroluminescent device as charge transport layer of)

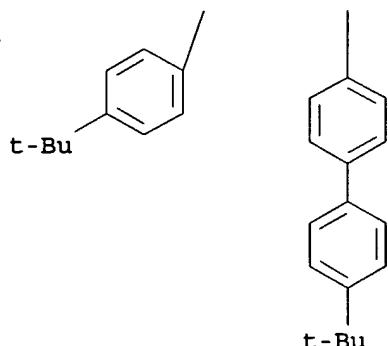
RN 199674-26-5 CAPLUS

CN 1,4-Benzenediamine, N,N-bis[4-[bis[4'-(1,1-dimethylethyl)[1,1'-biphenyl]-4-yl]amino]phenyl]-N',N'-bis[4'-(1,1-dimethylethyl)[1,1'-biphenyl]-4-yl]-(9CI) (CA INDEX NAME)

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CC 73-5 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)  
Section cross-reference(s): 22, 76

ST tertbutylbiphenylamino phenylamine charge transport electroluminescent device; glass transition temp tertbutylbiphenylamino phenylamine; carbazoyl phenylamine electroluminescent device performance thermostability

IT Electroluminescent devices  
(fabrication by vacuum deposition of triphenylamine derivs. and their performance)

IT Glass transition temperature  
Half wave potential  
(of [(tert-butylbiphenyl)amino]triphenylamine applied in  
electroluminescent device)  
IT Luminescence, electroluminescence  
(performance of triphenylamine-based devices)  
IT Vapor deposition process  
(vacuum; of triphenylamine derivs. in fabrication of electroluminescent  
device)  
IT 139092-78-7  
RL: DEV (Device component use); PEP (Physical, engineering or chemical  
process); PRP (Properties); PROC (Process); USES (Uses)  
(4,4',4''-Tri(N-carbazolyl); performance of electroluminescent device  
contg.)  
IT 199674-26-5P  
RL: DEV (Device component use); PEP (Physical, engineering or chemical  
process); PRP (Properties); SPN (Synthetic preparation);  
PREP (Preparation); PROC (Process); USES (Uses)  
(prep., glass transition temp., and performance in  
electroluminescent device as charge transport layer of)

L48 ANSWER 37 OF 39 CAPLUS COPYRIGHT 2003 ACS

ACCESSION NUMBER: 1997:618270 CAPLUS  
DOCUMENT NUMBER: 127:263592  
TITLE: Crosslinkable or chain extendable polyarylpolyamines  
and films for electroluminescent devices  
INVENTOR(S): Woo, Edmund P.; Inbasekaran, Michael; Shiang, William  
R.; Roof, Gordon R.; Wu, Weishi  
PATENT ASSIGNEE(S): Dow Chemical Co., USA  
SOURCE: PCT Int. Appl., 57 pp.  
CODEN: PIXXD2  
DOCUMENT TYPE: Patent  
LANGUAGE: English  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9733193	A2	19970912	WO 1997-US2643	19970220
WO 9733193	A3	20020926		
	W:	AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, HU, IL, IS, JP, KE, KG, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, TJ, TM, TR, TT, UA, UG, UZ, VN, YU, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM		
	RW:	KE, LS, MW, SD, SZ, UG, AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG		
AU 9722776	A1	19970922	AU 1997-22776	19970220
US 5929194	A	19990727	US 1997-967348	19971027
PRIORITY APPLN. INFO.:			US 1996-606180	A 19960223
			US 1996-696280	A 19960813

WO 1997-US2643 W 19970220

OTHER SOURCE(S) : MARPAT 127:263592

AB The polyaryl polyamines are prep'd. by the reaction of .gtoreq.1 tertiary di- or polyarylamine having 2 halogen substituents with a haloarom. compd. having a crosslinkable reactive group or trialkylsiloxy moiety. Films of the title compds., as well as films of polymers of their crosslinkable species, are efficient in the transport of pos. charges when exposed to relatively low voltage levels, and demonstrate solvent and heat resistance.

IT 195730-72-4P

RL: DEV (Device component use); IMF (Industrial manufacture);  
TEM (Technical or engineered material use); PREP (Preparation);  
USES (Uses)

(crosslinkable or chain extendable polyaryl polyamines for  
solvent-resistant films for electroluminescent devices)

RN 195730-72-4 CAPLUS

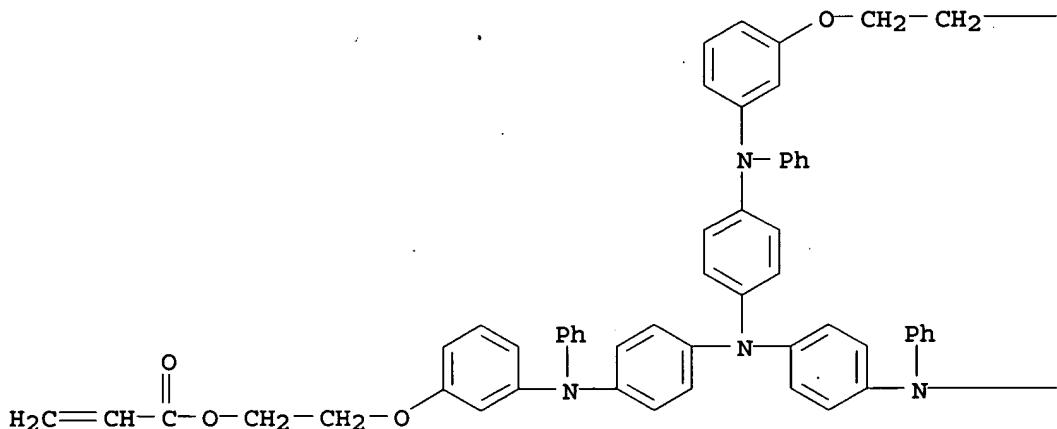
CN 2-Propenoic acid, nitrilotris[4,1-phenylene(phenylimino)-3,1-phenyleneoxy-2,1-ethanediyl] ester, homopolymer (9CI) (CA INDEX NAME)

CM 1

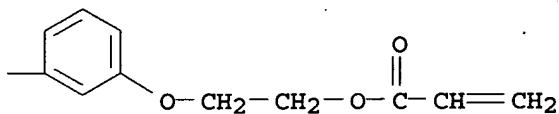
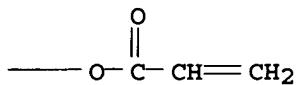
CRN 195730-64-4

CMF C69 H60 N4 O9

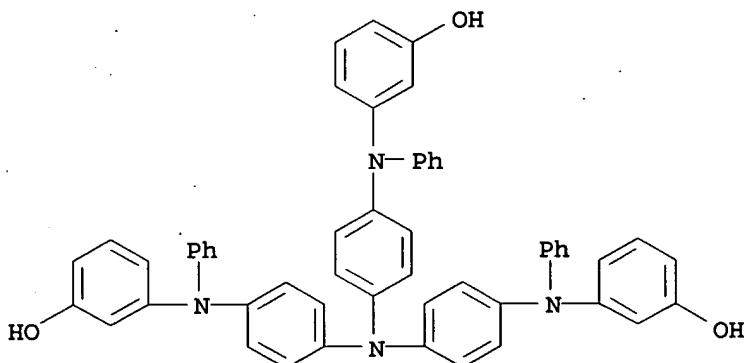
PAGE 1-A



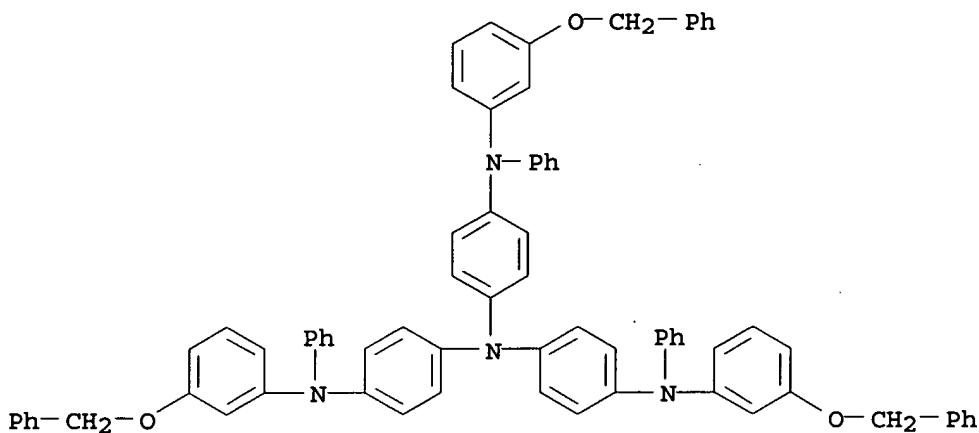
PAGE 1-B



IT 195730-60-0DP, reaction products with benzyl chloride and vinylbenzyl chloride 195730-66-6P  
RL: IMF (Industrial manufacture); PREP (Preparation)  
(crosslinkable or chain extendable polyarylpolyamines for solvent-resistant films for electroluminescent devices)  
RN 195730-60-0 CAPLUS  
CN Phenol, 3,3',3'''-[nitrilotris[4,1-phenylene(phenylimino)]]tris- (9CI) (CA INDEX NAME)



RN 195730-66-6 CAPLUS  
CN 1,4-Benzenediamine, N-phenyl-N-[3-(phenylmethoxy)phenyl]-N',N'-bis[4-phenyl[3-(phenylmethoxy)phenyl]amino]phenyl]- (9CI) (CA INDEX NAME)



IT 192134-45-5P 195730-58-6P 195730-60-0P

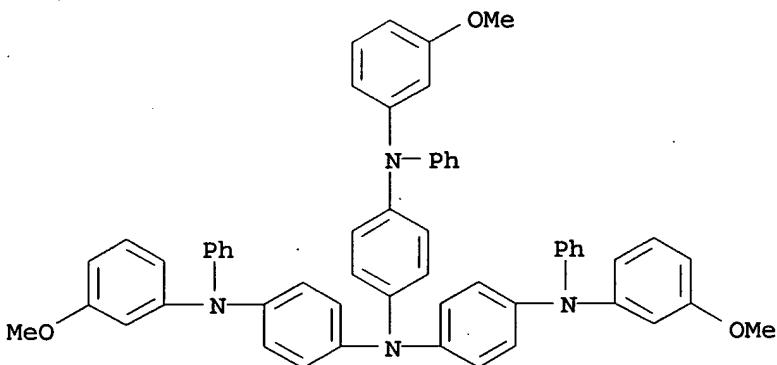
RL: IMF (Industrial manufacture); RCT (Reactant); PREP

(Preparation); RACT (Reactant or reagent)

(crosslinkable or chain extendable polyarylpolyamines for  
solvent-resistant films for electroluminescent devices)

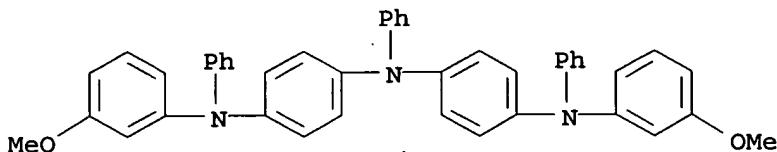
RN 192134-45-5 CAPLUS

CN 1,4-Benzenediamine, N-(3-methoxyphenyl)-N',N'-bis[4-[(3-methoxyphenyl)phenylamino]phenyl]-N-phenyl- (9CI) (CA INDEX NAME)



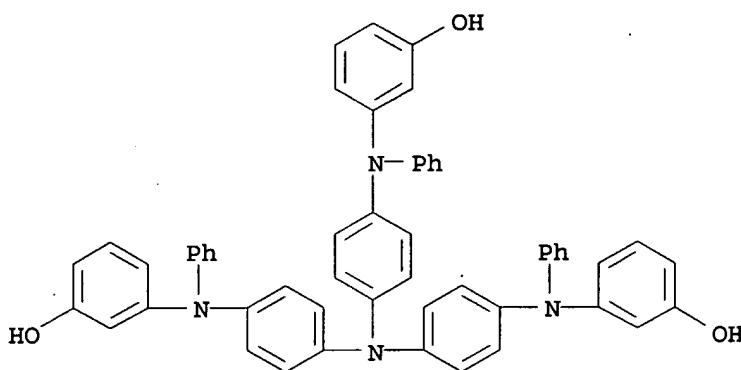
RN 195730-58-6 CAPLUS

CN 1,4-Benzenediamine, N-(3-methoxyphenyl)-N'-[4-[(3-methoxyphenyl)phenylamino]phenyl]-N,N'-diphenyl- (9CI) (CA INDEX NAME)



RN 195730-60-0 CAPLUS

CN Phenol, 3,3',3'''-[nitrilotris[4,1-phenylene(phenylimino)]]tris- (9CI) (CA INDEX NAME)



IT 195891-85-1P

RL: IMF (Industrial manufacture); PREP (Preparation)  
(film; crosslinkable or chain extendable polyarylpolyamines for  
solvent-resistant films for electroluminescent devices)

RN 195891-85-1 CAPLUS

CN 1,4-Benzenediamine, N-[3-[(ethenylphenyl)methoxy]phenyl]-N'-bis[4-[(3-  
[(ethenylphenyl)methoxy]phenyl)phenylamino]phenyl]-N-phenyl-, homopolymer  
(9CI) (CA INDEX NAME)

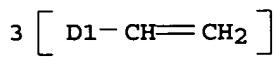
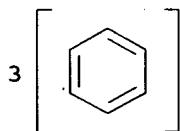
CM 1

CRN 195891-84-0

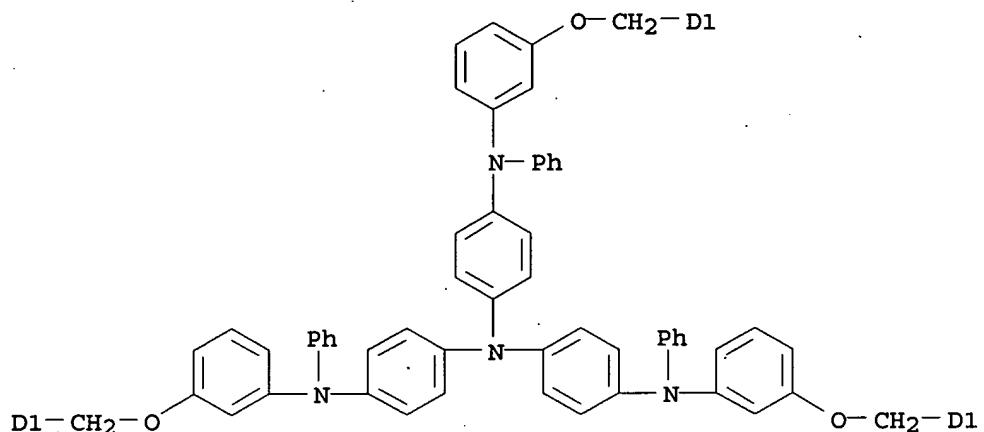
CMF C81 H66 N4 O3

CCI IDS

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PAGE 2-A



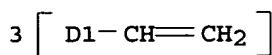
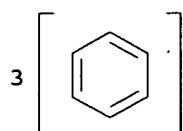
IT 195891-84-0P

RL: IMF (Industrial manufacture); PREP (Preparation)  
 (prep. and polymn.; crosslinkable or chain extendable  
 polyarylpolyamines for solvent-resistant films for  
 electroluminescent devices)

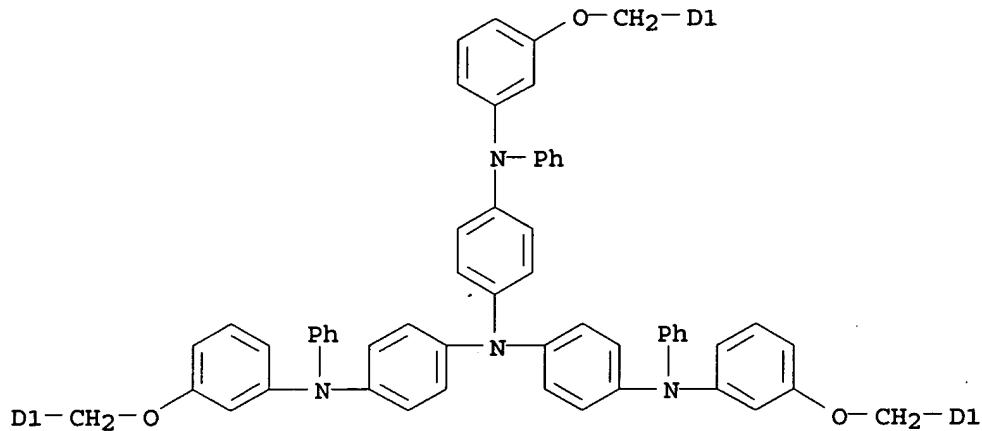
RN 195891-84-0 CAPLUS

CN 1,4-Benzenediamine, N-[3-[(ethenylphenyl)methoxy]phenyl]-N'-bis[4-[(3-[(ethenylphenyl)methoxy]phenyl)phenylamino]phenyl]-N-phenyl- (9CI) (CA INDEX NAME)

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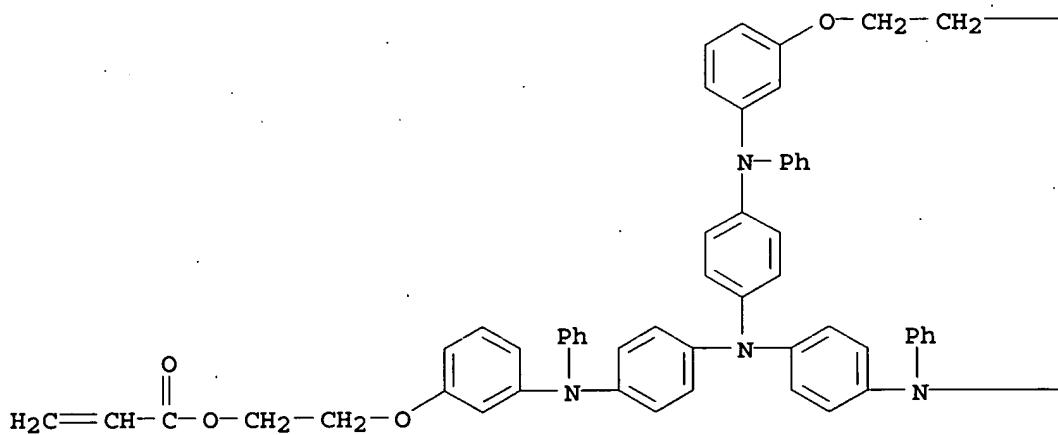
IT 195730-64-4P

RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)  
 (prepn. and polymn.; crosslinkable or chain extendable polyarylpolyamines for solvent-resistant films for electroluminescent devices)

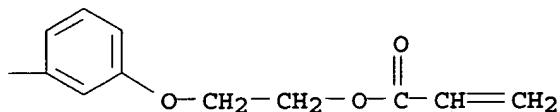
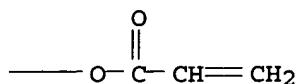
RN 195730-64-4 CAPLUS

CN 2-Propenoic acid, nitrilotris[4,1-phenylene(phenylimino)-3,1-phenyleneoxy-2,1-ethanediyl] ester (9CI) (CA INDEX NAME)

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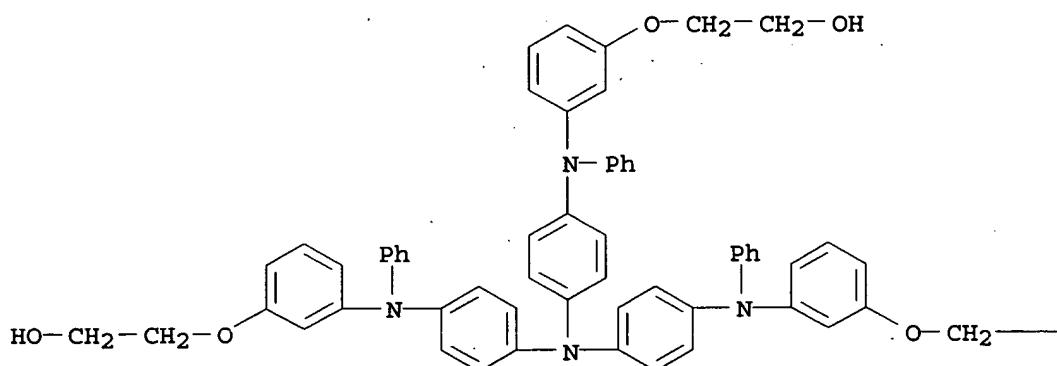
IT 195730-62-2P

RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)  
(reaction with acryloyl chloride; crosslinkable or chain extendable polyarylpolyamines for solvent-resistant films for electroluminescent devices)

RN 195730-62-2 CAPLUS

CN Ethanol, 2,2',2'''-[nitrilotris[4,1-phenylene(phenylimino)-3,1-phenyleneoxy]]tris- (9CI) (CA INDEX NAME)

PAGE 1-A



— CH<sub>2</sub>— OH

IC ICM G03C  
CC 37-3 (Plastics Manufacture and Processing)  
Section cross-reference(s): 35, 72  
ST polyarylamine manuf crosslinking film layer; light emitting diode film layer; electroluminescent device charge transport layer; hole transporting polymer film  
IT Amines, preparation  
Amines, preparation  
RL: DEV (Device component use); IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses) (aryl, tertiary, crosslinkable group-contg.; crosslinkable or chain extendable polyarylpolyamines for solvent-resistant films for electroluminescent devices)  
IT Electroluminescent devices  
(charge transport layers; crosslinkable or chain extendable polyarylpolyamines for solvent-resistant films for electroluminescent devices)  
IT Luminescence  
(crosslinkable or chain extendable polyarylpolyamines with)  
IT Solvent-resistant materials  
Solvent-resistant materials  
(heat-resistant; crosslinkable or chain extendable polyarylpolyamines for solvent-resistant films for electroluminescent devices)  
IT Heat-resistant materials  
Heat-resistant materials  
(solvent-resistant; crosslinkable or chain extendable polyarylpolyamines for solvent-resistant films for electroluminescent devices)  
IT 195730-72-4P  
RL: DEV (Device component use); IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)  
(crosslinkable or chain extendable polyarylpolyamines for solvent-resistant films for electroluminescent devices)  
IT 100308-69-8DP, reaction products with arylamines, oligomer 113703-67-6P  
195730-31-5P 195730-60-0DP, reaction products with benzyl chloride and vinylbenzyl chloride 195730-66-6P 195730-71-3P

RL: IMF (Industrial manufacture); PREP (Preparation)  
(crosslinkable or chain extendable polyarylpolyamines for  
solvent-resistant films for electroluminescent devices)

IT 1073-39-8DP, 4-Bromobenzocyclobutene, reaction products with arylamines,  
oligomer 4316-58-9DP, reaction products with bromobenzocyclobutene  
100308-67-6DP, reaction products with bromobenzocyclobutene

RL: IMF (Industrial manufacture); PRP (Properties); PREP (Preparation)  
(crosslinkable or chain extendable polyarylpolyamines for  
solvent-resistant films for electroluminescent devices)

IT 100308-67-6P 159191-56-7DP, reaction products with arylamines  
192134-45-5P 195730-34-8DP, reaction products with silyl-contg.  
benzeneboronic acid 195730-42-8DP, reaction products with silyl-contg.  
benzeneboronic acid 195730-58-6P 195730-60-0P

RL: IMF (Industrial manufacture); RCT (Reactant); PREP  
(Preparation); RACT (Reactant or reagent)  
(crosslinkable or chain extendable polyarylpolyamines for  
solvent-resistant films for electroluminescent devices)

IT 814-68-6, Acryloyl chloride

RL: RCT (Reactant); RACT (Reactant or reagent)  
(crosslinkable or chain extendable polyarylpolyamines for  
solvent-resistant films for electroluminescent devices)

IT 195730-33-7P 195730-37-1P 195730-38-2P 195730-45-1P 195730-51-9P  
195730-55-3P 195891-85-1P

RL: IMF (Industrial manufacture); PREP (Preparation)  
(film; crosslinkable or chain extendable polyarylpolyamines for  
solvent-resistant films for electroluminescent devices)

IT 20441-06-9P 100308-69-8P 159191-56-7P 195730-34-8P 195730-39-3P  
195730-42-8P

RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT  
(Reactant or reagent)  
(intermediate; crosslinkable or chain extendable polyarylpolyamines for  
solvent-resistant films for electroluminescent devices)

IT 195730-70-2P 195891-84-0P

RL: IMF (Industrial manufacture); PREP (Preparation)  
(prepn. and polymn.; crosslinkable or chain extendable  
polyarylpolyamines for solvent-resistant films for  
electroluminescent devices)

IT 195730-32-6P 195730-36-0P 195730-44-0P 195730-49-5P 195730-53-1P  
195730-64-4P

RL: IMF (Industrial manufacture); RCT (Reactant); PREP  
(Preparation); RACT (Reactant or reagent)  
(prepn. and polymn.; crosslinkable or chain extendable  
polyarylpolyamines for solvent-resistant films for  
electroluminescent devices)

IT 195730-35-9P 195730-43-9P 195730-62-2P

RL: IMF (Industrial manufacture); RCT (Reactant); PREP  
(Preparation); RACT (Reactant or reagent)  
(reaction with acryloyl chloride; crosslinkable or chain extendable  
polyarylpolyamines for solvent-resistant films for  
electroluminescent devices)

IT 108-37-2, 3-Bromochlorobenzene 128-08-5 624-31-7, 4-Iodotoluene  
637-87-6, 4-Iodochlorobenzene 116223-55-3, 4-Iodophenylpentylether

RL: RCT (Reactant); RACT (Reactant or reagent)  
(reaction with arylamines; crosslinkable or chain extendable  
polyaryl polyamines for solvent-resistant films for electroluminescent  
devices)

IT 195730-47-3P  
RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT  
(Reactant or reagent)  
(reaction with benzocyclobuteneboronic acid; crosslinkable or chain  
extendable polyaryl polyamines for solvent-resistant films for  
electroluminescent devices)

IT 121-43-7, Trimethylborate  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(reaction with bromobenzocyclobutene; crosslinkable or chain extendable  
polyaryl polyamines for solvent-resistant films for electroluminescent  
devices)

IT 4316-51-2P, N,N-Diphenyl-p-anisidine  
RL: IMF (Industrial manufacture); PRP (Properties); PREP (Preparation)  
(reaction with bromosuccinimide; crosslinkable or chain extendable  
polyaryl polyamines for solvent-resistant films for electroluminescent  
devices)

IT 195730-40-6P  
RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT  
(Reactant or reagent)  
(reaction with bromosuccinimide; crosslinkable or chain extendable  
polyaryl polyamines for solvent-resistant films for electroluminescent  
devices)

IT 4316-53-4  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(reaction with bromosuccinimide; crosslinkable or chain extendable  
polyaryl polyamines for solvent-resistant films for electroluminescent  
devices)

IT 100-44-7, Benzyl chloride, reactions 540-51-2, 2-Bromoethanol  
30030-25-2  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(reaction with hydroxy arylamines; crosslinkable or chain extendable  
polyaryl polyamines for solvent-resistant films for electroluminescent  
devices)

IT 101-16-6, 3-Methoxydiphenylamine  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(reaction with iodophenylamine; crosslinkable or chain extendable  
polyaryl polyamines for solvent-resistant films for electroluminescent  
devices)

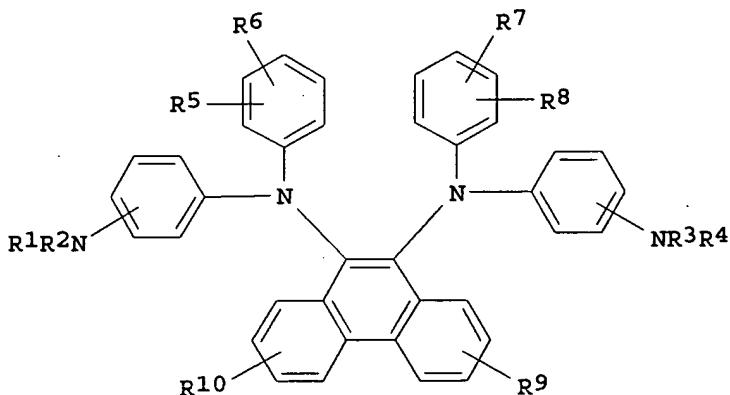
IT 74-31-7, N,N'-Diphenyl-1,4-phenylenediamine 531-91-9,  
N,N'-Diphenylbenzidine  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(reaction with iodophenylpentylether; crosslinkable or chain extendable  
polyaryl polyamines for solvent-resistant films for electroluminescent  
devices)

IT 4181-20-8 4316-58-9  
RL: RCT (Reactant); RACT (Reactant or reagent).  
(reaction with methoxydiphenylamine; crosslinkable or chain extendable  
polyaryl polyamines for solvent-resistant films for electroluminescent

devices)  
IT 67963-68-2  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(reaction with trimethylborate; crosslinkable or chain extendable  
polyaryl polyamines for solvent-resistant films for electroluminescent  
devices)

L48 ANSWER 38 OF 39 CAPLUS COPYRIGHT 2003 ACS  
ACCESSION NUMBER: 1996:197218 CAPLUS  
DOCUMENT NUMBER: 124:274120  
TITLE: Hole-transporting material and electroluminescent  
device and electrophotographic device using it  
INVENTOR(S): Tamano, Michiko; Onikubo, Shunichi; Kamimura,  
Toshifumi; Ogawa, Tadashi; Enokida, Toshio  
PATENT ASSIGNEE(S): Toyo Ink Mfg Co, Japan  
SOURCE: Jpn. Kokai Tokkyo Koho, 15 pp.  
CODEN: JKXXAF  
DOCUMENT TYPE: Patent  
LANGUAGE: Japanese  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 08020771	A2	19960123	JP 1994-157079	19940708
PRIORITY APPLN. INFO.:			JP 1994-157079	19940708
OTHER SOURCE(S):	MARPAT 124:274120			
GI				



I

AB The hole-transporting material consists of a phenanthrene deriv. I (R1-4 = H, alkyl, alkoxy, carbocyclic arom. group; R5-8 = H, halo, alkyl, alkoxy, cycloalkyl, carbocyclic arom. group, heterocyclic group; R9-10 = H, halo, alkyl, alkoxy; R1-10 may be substituted).  
IT 175395-70-7P

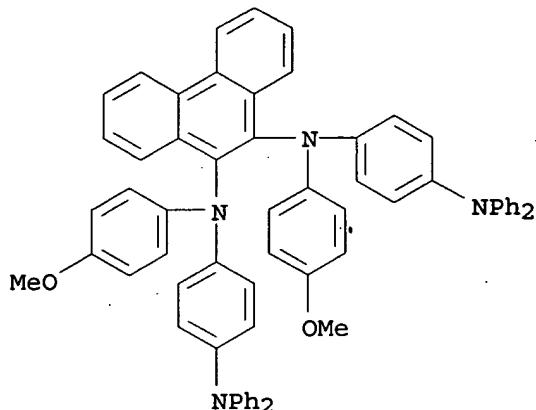
RL: DEV (Device component use); PNU (Preparation, unclassified); TEM

(Technical or engineered material use); PREP (Preparation); USES  
(Uses)

(phenanthrene deriv. hole-transporting material for  
electroluminescent device and electrophotog. device)

RN 175395-70-7 CAPLUS

CN 9,10-Phenanthrenediamine, N,N'-bis[4-(diphenylamino)phenyl]-N,N'-bis(4-methoxyphenyl)- (9CI) (CA INDEX NAME)



IT 175395-72-9 175395-73-0 175395-75-2

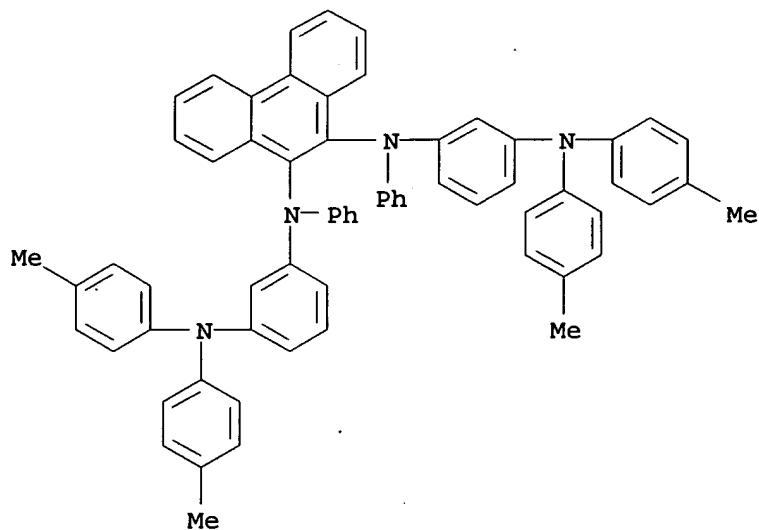
175395-76-3 175395-80-9 175395-81-0

RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)

(phenanthrene deriv. hole-transporting material for  
electroluminescent device and electrophotog. device)

RN 175395-72-9 CAPLUS

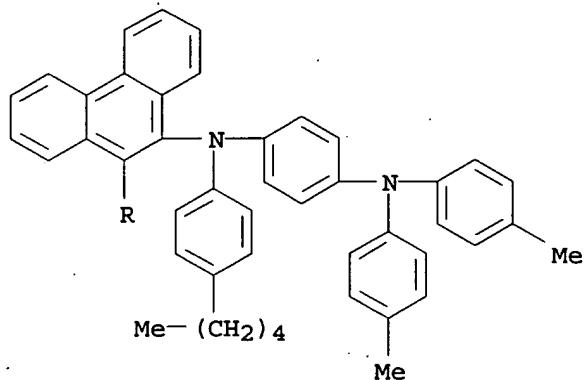
CN 9,10-Phenanthrenediamine, N,N'-bis[3-[bis(4-methylphenyl)amino]phenyl]-N,N'-diphenyl- (9CI) (CA INDEX NAME)



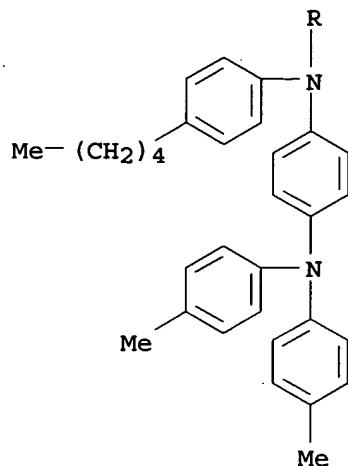
RN 175395-73-0 CAPLUS

CN 9,10-Phenanthrenediamine, N,N'-bis[4-[bis(4-methylphenyl)amino]phenyl]-N,N'-bis(4-pentylphenyl)- (9CI) (CA INDEX NAME)

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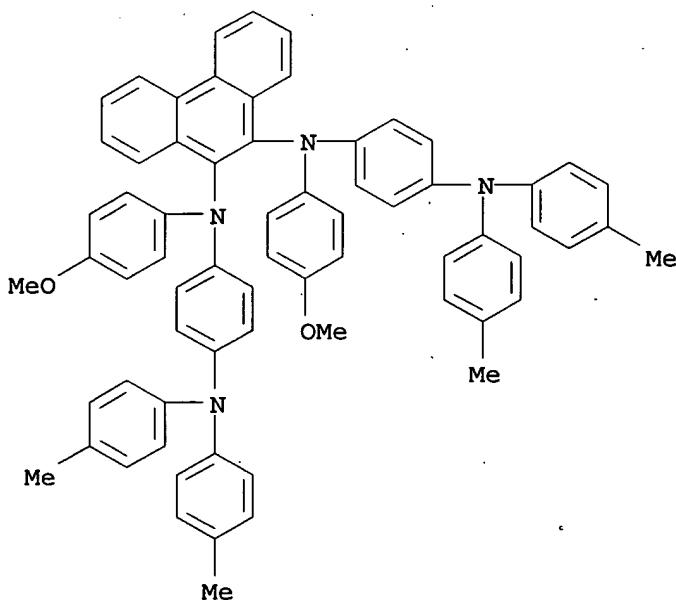


PAGE 2-A



RN 175395-75-2 CAPLUS

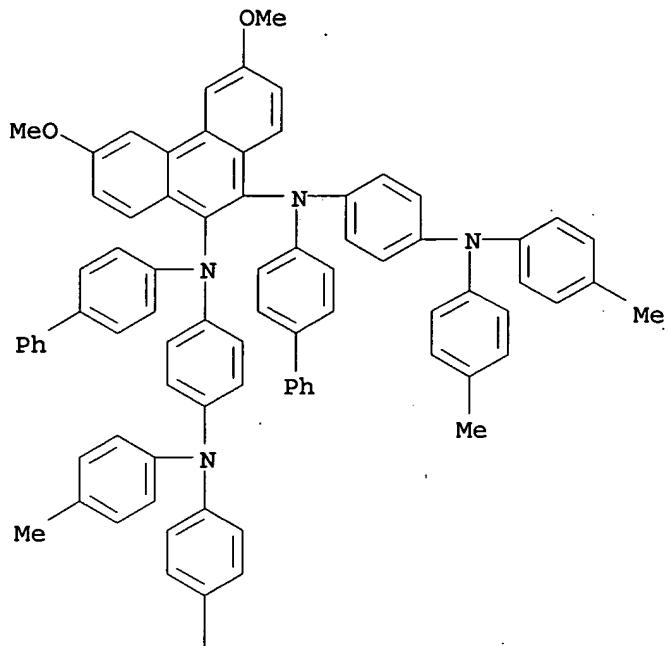
CN 9,10-Phenanthrenediamine, N,N'-bis[4-[bis(4-methylphenyl)amino]phenyl]-N,N'-bis(4-methoxyphenyl)- (9CI) (CA INDEX NAME)



RN 175395-76-3 CAPLUS

CN 9,10-Phenanthrenediamine, N,N'-bis[1,1'-biphenyl]-4-yl-N,N'-bis[4-[bis(4-methylphenyl)amino]phenyl]-3,6-dimethoxy- (9CI). (CA INDEX NAME)

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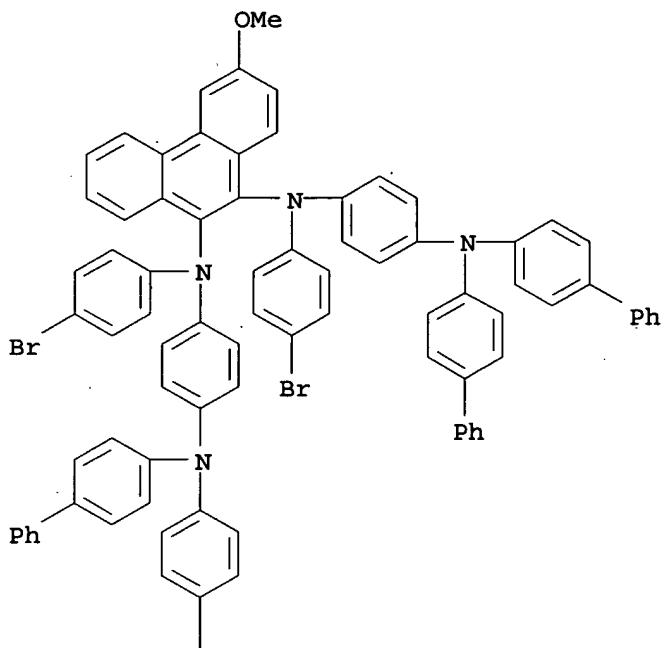
PAGE 2-A



RN 175395-80-9 CAPLUS

CN 9,10-Phenanthrenediamine, N,N'-bis[4-[bis([1,1'-biphenyl]-4-yl)amino]phenyl]-N,N'-bis(4-bromophenyl)-3-methoxy- (9CI) (CA INDEX NAME)

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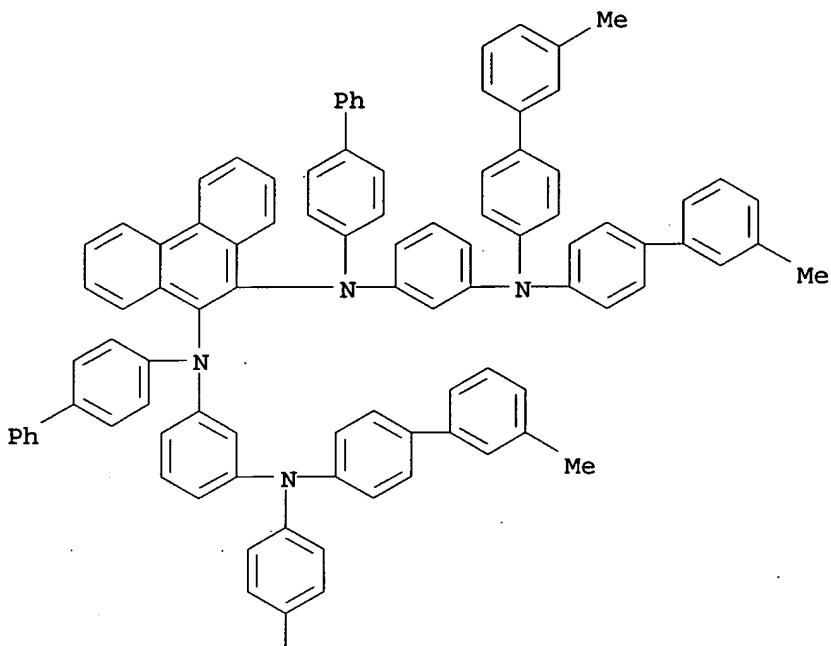
PAGE 2-A



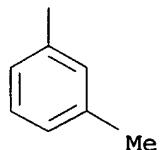
RN 175395-81-0 CAPLUS

CN 9,10-Phenanthrenediamine, N,N'-bis([1,1'-biphenyl]-4-yl)-N,N'-bis[3-[bis(3'-methyl[1,1'-biphenyl]-4-yl)amino]phenyl]- (9CI) (CA INDEX NAME)

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IC ICM C09K011-06  
ICS G03G005-06; H05B033-00  
CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)  
Section cross-reference(s): 25, 74  
ST phenanthrene deriv hole transporting material; electroluminescent device  
phenanthrene deriv; electrophotog photoreceptor phenanthrene deriv  
IT Electroluminescent devices  
(phenanthrene deriv. hole-transporting material for electroluminescent device and electrophotog. device)  
IT Electrophotographic photoconductors and photoreceptors  
(phenanthrene deriv. hole-transporting material for electroluminescent device and electrophotog. photoreceptor)  
IT 175395-70-7P  
RL: DEV (Device component use); PNU (Preparation, unclassified); TEM  
(Technical or engineered material use); PREP (Preparation); USES

(Uses)

(phenanthrene deriv. hole-transporting material for  
electroluminescent device and electrophotog. device)

IT 175395-71-8 175395-72-9 175395-73-0 175395-74-1  
175395-75-2 175395-76-3 175395-77-4 175395-78-5  
175395-79-6 175395-80-9 175395-81-0

RL: DEV (Device component use); TEM (Technical or engineered material  
use); USES (Uses)

(phenanthrene deriv. hole-transporting material for  
electroluminescent device and electrophotog. device)

IT 84-11-7, 9,10-Phenanthraquinone 122-39-4, Diphenylamine, reactions  
540-37-4, p-Iodoaniline 696-62-8, p-Iodoanisole

RL: RCT (Reactant); RACT (Reactant or reagent)

(phenanthrene deriv. hole-transporting material for electroluminescent  
device and electrophotog. device)

L48 ANSWER 39 OF 39 CAPLUS COPYRIGHT 2003 ACS

ACCESSION NUMBER: 1995:489867 CAPLUS

DOCUMENT NUMBER: 122:277531

TITLE: Trisarylaminobenzene derivatives, compounds for  
organic electroluminescent element, and organic  
electroluminescent element.

INVENTOR(S): Shirota, Yasuhiko; Nakaya, Kenji; Okada, Norihiro;  
Namba, Kenryo

PATENT ASSIGNEE(S): Japan

SOURCE: Eur. Pat. Appl., 22 pp.

CODEN: EPXXDW

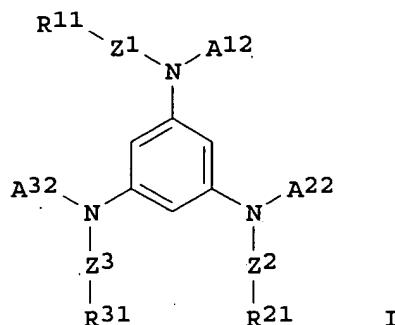
DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 611148	A1	19940817	EP 1994-300954	19940209
EP 611148	B1	19980603		
R: DE, FR, GB				
JP 07097355	A2	19950411	JP 1994-36605	19940209
US 5508136	A	19960416	US 1994-194145	19940210
PRIORITY APPLN. INFO.:			JP 1993-45785	A 19930210
			JP 1993-140041	A 19930519
OTHER SOURCE(S):	MARPAT	122:277531		
GI				



**AB** Novel trisarylaminobenzene derivs. are represented by the formula I [Z1, Z2, and Z3 = divalent arom. ring residues, R11, R21, and R31 = groups represented by -NZ1Z2, -NHZ1, -NR1Z1, -Z1, -OZ1 or -SZ1 wherein each of Z1 and Z2 = a monovalent arom. ring residue, and R1 is an alkyl group, gtoreq.1 of R11, R21, and R31 being a group represented by -NZ1Z2, -NHZ1 or -NR1Z1, and A12, A22, and A32 = arom. residues, alkyl groups or H]. An org. electroluminescent element which uses the compd. in an org. compd. layer, esp. in a hole injection transport layer provides uniform plane light emission and is durable enough to maintain luminance.

**IT** 162879-22-3 162879-23-4 162879-26-7

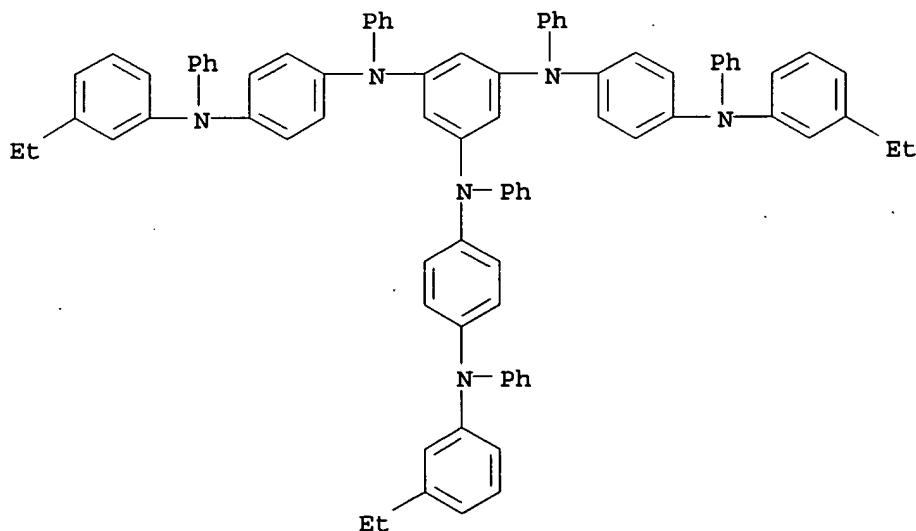
162879-27-8 162879-28-9 162879-29-0

162879-30-3

RL: MOA (Modifier or additive use); USES (Uses)  
(electroluminescent element component)

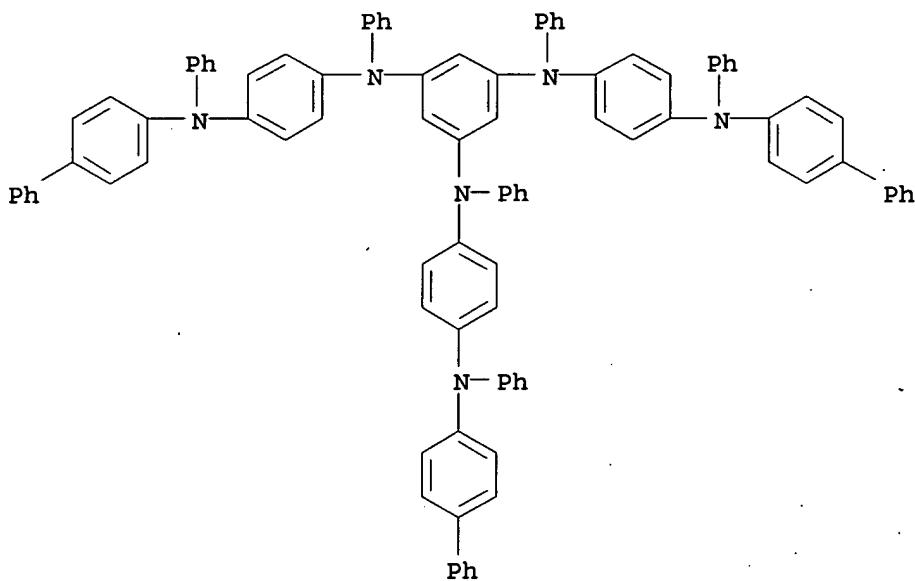
**RN** 162879-22-3 CAPLUS

**CN** 1,3,5-Benzenetriamine, N,N',N'''-tris[4-[(3-ethylphenyl)phenylamino]phenyl]-N,N',N'''-triphenyl- (9CI) (CA INDEX NAME)



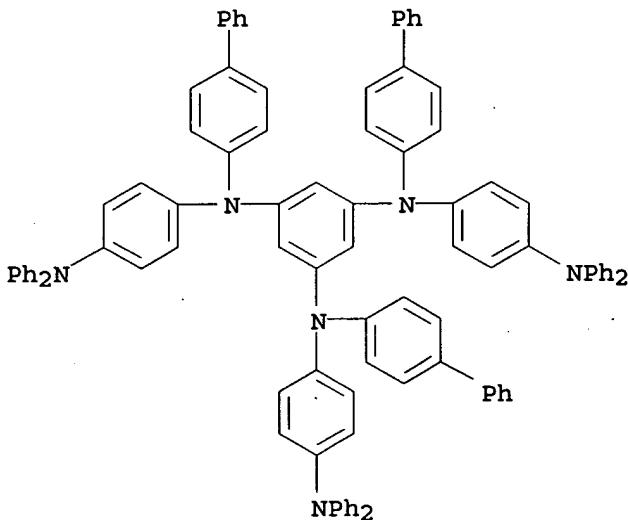
RN 162879-23-4 CAPLUS

CN 1,3,5-Benzenetriamine, N,N',N'''-tris[4-([1,1'-biphenyl]-4-ylphenylamino)phenyl]-N,N',N'''-triphenyl- (9CI) (CA INDEX NAME)



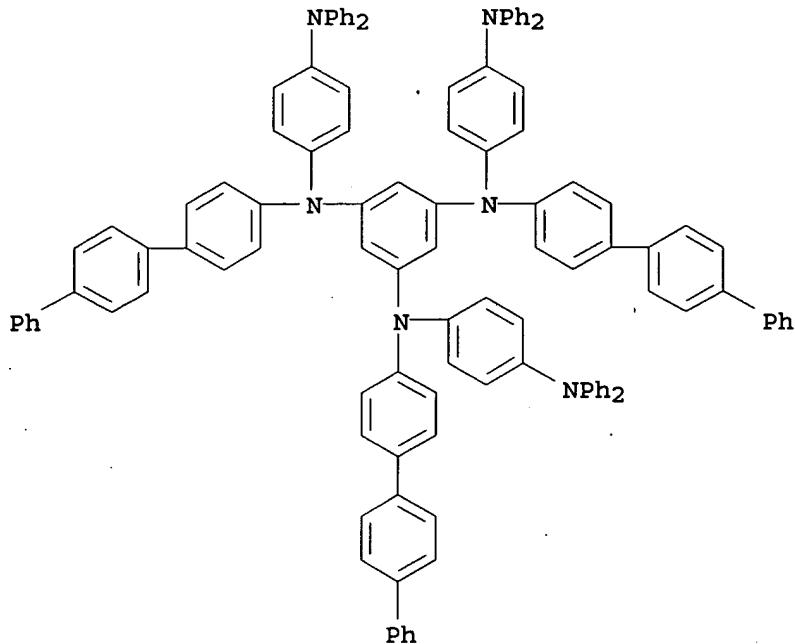
RN 162879-26-7 CAPLUS

CN 1,3,5-Benzenetriamine, N,N',N'''-tris([1,1'-biphenyl]-4-yl)-N,N',N'''-tris[4-(diphenylamino)phenyl]- (9CI) (CA INDEX NAME)



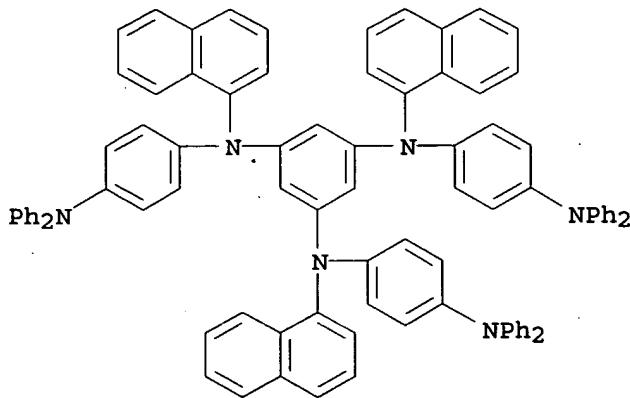
RN 162879-27-8 CAPLUS

CN 1,3,5-Benzenetriamine, N,N',N'''-tris[4-(diphenylamino)phenyl]-N,N',N'''-tris([1,1':4',1'''-terphenyl]-4-yl)- (9CI) (CA INDEX NAME)



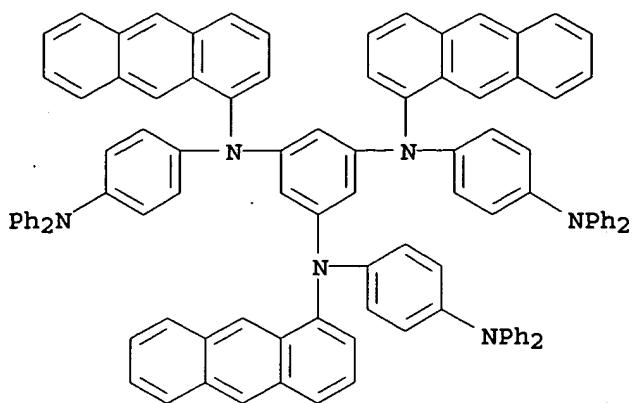
RN 162879-28-9 CAPLUS

CN 1,3,5-Benzenetriamine, N,N',N'''-tris[4-(diphenylamino)phenyl]-N,N',N'''-tri-1-naphthalenyl- (9CI) (CA INDEX NAME)



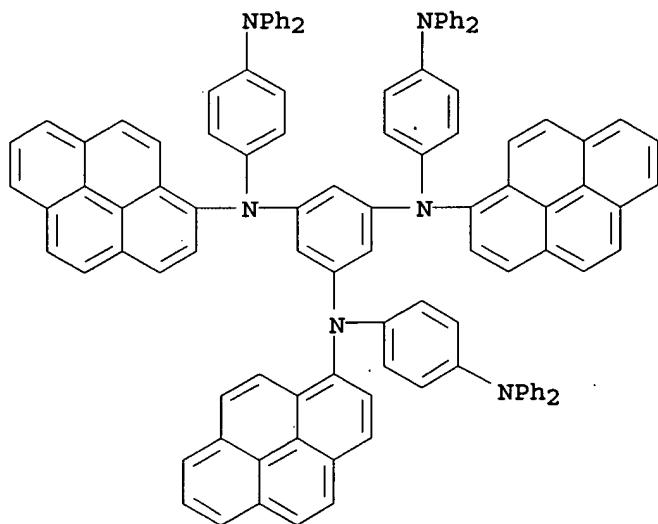
RN 162879-29-0 CAPLUS

CN 1,3,5-Benzenetriamine, N,N',N'''-tri-1-anthracenyl-N,N',N'''-tris[4-(diphenylamino)phenyl]- (9CI) (CA INDEX NAME)



RN 162879-30-3 CAPLUS

CN 1,3,5-Benzenetriamine, N,N',N'''-tris[4-(diphenylamino)phenyl]-N,N',N'''-tri-1-pyrenyl- (9CI) (CA INDEX NAME)

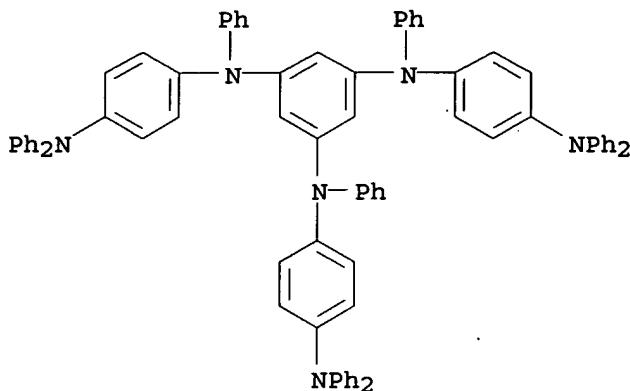


IT 153521-90-5P

RL: MOA (Modifier or additive use); SPN (Synthetic preparation);  
PREP (Preparation); USES (Uses)  
(electroluminescent element component)

RN 153521-90-5 CAPLUS

CN 1,3,5-Benzenetriamine, N,N',N'''-tris[4-(diphenylamino)phenyl]-N,N',N'''-tri-phenyl- (9CI) (CA INDEX NAME)



IC ICM C07C211-54

ICS H05B033-14; H01B001-12

CC 73-5 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

Section cross-reference(s): 25

ST arylaminobenzene deriv org electroluminescent material

IT Electroluminescent devices

(trisarylaminobenzene derivs. for hole injection transport layer)

IT 153521-91-6 162879-22-3 162879-23-4 162879-24-5

162879-25-6 162879-26-7 162879-27-8

162879-28-9 162879-29-0 162879-30-3

162879-31-4 162879-32-5 162879-33-6 162879-34-7 162879-35-8

162879-36-9 162879-37-0 162879-38-1

RL: MOA (Modifier or additive use); USES (Uses)  
(electroluminescent element component)

IT 153521-90-5P

RL: MOA (Modifier or additive use); SPN (Synthetic preparation);

PREP (Preparation); USES (Uses)

(electroluminescent element component)